Tanker Q&As and CIs on the IACS CSR Knowledge Centre

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
54	8/6.3.2.1	Question	bottom slamming loads	2006/5/5	Please provide us with the background why the extent in height has been increased to 500 mm, compared to current rule requirement.	The extent of the area to which strengthening against bottom slamming loads is made has been increased somewhat from that in the present Rules due to damages recorded to existing ships in operation. It is seen from damage records that it is important to cover the turn of bilge to a sufficient height, because the curve bilge plating may be subject to the 'snap-through' effect.	
61	8/2.5.7.8	Question	stool top plating	2006/5/5	(b) stool top plating :the thickness and material yield strength of the stool top plate is not to be less than the attached corrugated bulkhead flange or web. This requirement (b) should be removed, considering that local fine mesh analysis should be performed mandatorily.	The present requirements of 8/2.5.7.8 (b) are based on existing text in ABS Rules and are similar to requirements in the Common Structural Rules for Bulk Carriers. Please note that the thickness requirement is primarily experienced based and the stool top plate extension requirement is related to having sufficient structure to enable welding of the corrugation to the stool top. Further a local fine mesh FE analysis will not address these issues.	
62	8/2.5.7.10	Question	stool bottom plating	2006/5/5	b) stool bottom plating : „The thickness and material yield strength of the stool bottom plate is not to be less than the attached corrugated bulkhead flange or web (c) stool side plating and internal structure. Within the region of the corrugation depth above the stool bottom plate the thickness of the stool side plate is not to be less than 80%; of that required by 2.5.7.2 for the corrugated bulkhead flange at the upper end and is to be of at least the same material yield strength. This requirement (b) should be removed, considering that local fine mesh analysis should be performed mandatorily.	The present requirements of 8/2.5.7.10(b) are based on existing text in ABS Rules and are similar to requirements in the Common Structural Rules for Bulk Carriers. Please note that the thickness requirement is primarily experienced based and the stool bottom plate extension requirement is related to having sufficient structure to enable welding of the corrugation to the stool bottom. Further a local fine mesh FE analysis will not address these issues.	
63	8/2.6.1.7	Question	Webs of the primary support	2006/5/5	2nd and 3rd sentences should be re-written to permit reduction, considering that FE analysis is performed.	Webs of the primary support 2nd and 3rd sentences should be re-written to permit reduction, considering that FE analysis is performed.members are to be stiffened in accordance with Section 10/2.3. The webs of the primary support members are to have a depth of not less than as given by these requirements. Lesser depths may be accepted where equivalent stiffness is demonstrated. In no case are the depths of primary support members to be less than 2.5 times the depth of the slots for stiffeners, if the slots are not closed.From our experiences using the equivalent stiffness/inertia described in 3/5.3.3.4, we consider that most of today's designs will be able to comply with this criteria.	
86	Table 8.2.5	Question	stiffener arrangements	2006/10/5	To be modified as follows: = 12 except for the lower 15 % bending span of vertical stiffeners = 10 ~ 12 for the lower 15 % bending span of vertical stiffeners, the exact value is to be calculated based on Table 8.3.5, combining Load model A and D.	This requirement applies to typical stiffener arrangements. The strength model used in the evaluation is a simplification and these requirements are consistent with present Rule practice.	

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87	Table 8.2.6	Question	stiffener arrangements	2006/10/5	To be modified as follows: = 0.5 except for the lower 20 % shear span of vertical stiffeners = 0.5 ~ 0.7 for the lower 20 % shear span of vertical stiffeners, the exact value is to be calculated based on Table 8.3.5, combining Load model A and D.	This requirement applies to typical stiffener arrangements. The strength model used in the evaluation is a simplification and these requirements are consistent with present Rule practice.	
89	8/2.6.7.2	Question	horizontal stringer	2006/10/5	P design pressure for the design load set being considered, calculated at mid point of effective bending span, lbdg-hs, of the horizontal stringer, in kN/m2It is understood that the design pressure is to be calculated at the midpoint of the loading breadth.	Yes you are correct. In the case of horizontal stringer the pressure is to be taken at the mid-span of the horizontal stringer and at the midpoint of the loading breadth. This is also described in 3/5.3.1.	
90	8/2.6.7.4	Question	horizontal stringer	2006/10/5	S sum of the half spacing(distance between stringers) on each side of the horizontal stringer under consideration, in m. It is understood that the "half spacing" means the distance between the stringer under consideration and the mid point of the shear span of vertical stiffener.	The half spacing is to be taken as the half of the actual distance between the member concerned and the member above or below.	
92	8/6.2.4.1	Question	Sloshing assessment	2006/10/5	Sloshing assessment of stiffeners on tank boundaries:Please clarify that the shear area need not be checked for stiffeners on tank boundaries.	You are correct to question this, however, we had originally included this check but since it does not govern it was then excluded. We will add a note in the background document explaining that the shear assessment of stiffeners has been omitted as it is not governing.	
126	8/1.3.2.2	Question	Calculation of hull girder shear strength	2006/9/27	In the calculation of hull girder shear strength, q1-net50 is the first moment of area about the horizontal neutral axis of the members between vertical level at which the shear stress being determined and the vertical extremity of the effective shear carrying members. In this case, is it required to consider all strength members as in IACS URS11?	In the calculation of first moment "q1-net50", all the effective longitudinal strength members (including longitudinals) are to be considered (not only the effective shear carrying members).	
127	8/2.2.3 & Table 8.2.5	Question	Assignment of Longl. Space	2006/9/1	How is the Longl. Space (mm) decided in the case of longitudinal at the ship side close to the bilge and the longitudinal at the bottom close to the bilge?	The spacing between the outermost and the 2nd outermost bottom longitudinals is to be used for the outermost bottom longitudinal. Similarly, the spacing between the lowest and the 2nd lowest side longitudinals is to be used for the lowest side longitudinal. This is applicable irrespective of whether bilge bracket is fitted or not.	
128	8/2.5.7.2	Question	Section modulus of corugated bulkhead	2006/8/31	The plate thickness at the upper 1/3 part of the corrugated bulkhead can be reduced by 20% than the thickness at the lower part, but the net section modulus at the lower, upper and the center part has to be as per Sec.8/2.5.7.6. Is the upper part required to have the section modulus as per Sec.8/2.5.7.6 even after reducing the thickness by 20%?	The upper part of the corrugation, with the thickness reduced by 20%, is also required to comply with Sec.8/2.5.7.6	
129	8/2.5.7.2	Question	Rounding of reduced bulkhead thickness	2006/8/31	After reducing the thickness of the upper part of the Vertical Corrugated BHD to 80% of the lower part thickness, can the rounding be done by taking the nearest 0.5 mm, or to be round up?	The nearest 0.5mm may be taken.	

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130	8/2.6.4	Question	Effective span of deck transverse	2006/10/9	How is the effective span of the 'On deck' Deck Trans decided?	Deck transverses above deck do normally not have brackets below deck at the end connections and then the effective span is the distance between the end supports. The span is typically the distance from where the inner side is welded to deck to the where the longiudinal stool side plate is welded to the deck. Please note that the section modulus and shear area requirements in 8/2.6.4.3 and 8/2.6.4.4 are not applicable to this type of configuration. Section 8/2.6.1.2 refers to Section 8/7, which is to be applied where the basic structural configurations or strength models assumed in Section 8/2 to 8/5 are not appropriate. Or alternatively, direct calculation including FEA may be used. Please note that, however, some additional calculation with using the density of 1.025 and full scantling draught may be necessary since FEA as per Appendix B is not sufficient due to the following reasons: 1. The prescriptive requirements should use cargo density of 1.025 whereas FEA in Appendix B uses 0.9 in general. 2. Green sea pressure in the prescriptive requirements is to be based on the scantling draught whereas the green sea pressure in FEA in Appendix B is based on 0.9Tsc in seagoing condition.	
131	Sec 8	Question	Transverse web in hopper, pipe duct keel & lower stool	2006/9/27	There are no rule requirements corresponding to bending and shear for Trans webs in Hopper, Pipe Duct Keel and Lower stool. Is it required to apply Sec.8.7 in this case or the confirmation by FEM is enough?	Members should comply with the minimum thickness (Table 8.2.1 /Table 8.2.2), stiffness and proportion (10/2) and FEM requirements (9/2	
132	Sec 8	Question	No. of sections for local calculations	2006/9/11	At how many sections in the direction of the ship length should the local calculation be carried out? Is it at the Aft, Mid and Fore sections of the cargo tank? From a practical point of view, to what extent the calculations are necessary?	As per the rules, all the sections should satisfy the required scantlings. The required scantling values at each section (especially outside amidships) are different because the values of the longitudinal bending moment and the distances from the center of gravity position for each section are different. In general, aft and fore end of each tank. Additional mid location may be also necessary, where section shape or trend of SWBM/WIBM changes.	
144	Table 8.2.2	Question	Minimum thickness requirement for cross-tie	2006/9/1	Is there minimum thickness requirement to the cross tie? Table 8.2.2 does not indicate cross tie.	The minimum thickness requirement for "Web and flanges of vertical web frames on longitudinal bulkheads, horizontal stringers on transverse bulkheadd and deck transverses (above and below upper deck)" is to be applied for cross tie. A Rule change to include this effect will be considered.	
147	8/6.4.7.6	Question	Bow impact region - primary support members	2006/9/12	8/6.4.7.6 indicates the following formula: Aw-net50=(5 fpt Pim bslm lshr) / Ct τ yd fpt=lslm/lshr Inputting fpt into the above equation, Aw-net50=(5 lslm Pim bslm)/Ct τyd which means that lshr has no influence to this equation, unless lslm is greater than lshr. Is this correct?	The conclusion is correct. The parameter definition specifies that lslm is not to be taken as greater than lshr. Consequently lshr has influence on the equation as a limiting parameter when lslm is greater than lshr.	

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151	8/2.6.1.1	CI	Scantlings of the primary support members in the cargo tank region	2007/10/5	Ref. 8/2.6.1.1 "The following requirements relate to the determination of scantlings of the primary support members in the cargo tank region for the extents shown in Figure 8.2.4" It is noted that Figure 8.2.4 specify transverse and primary support members within the cargo/ballast tanks. Does that mean 8/2.6 not apply to deck transverses fitted above deck (not within cargo tank)? Please clarify which prescriptive requirement appy do deck transverses fitted above deck.	Figure 8.2.4 should be read in conjunction with Section 8/2.6.1.2, which describes more detailed application of the prescriptive requirements in Section 8/2.6. As such, the section modulus and shear area criteria for primary support members as contained in Section 8/2.6 are applicable to the structural elements as listed in Section 8/2.6.1.2. The section modulus and shear area criteria for primary support members of structural configurations other than those listed in therein are to be obtained by calculation methods as described in Section 8/7. Please note, however, that all other criteria (e.g. minimum thickness (Section 8/2.1.6), web depth (Section 8/2.6.4.1), moment of inertia (Section 8/2.6.4.2), slenderness ratio (Section 10/2.3)) are still applicable. Where it is impractical to fit a deck transverse with the required web depth, then it is permissible to fit a member with reduced depth provided that the fitted member has equivalent inertia to the required member in accordance with Section 3/5.3.3.4. This equivalent inertia can be also demonstrated by "equivalent deflection". We will update the Rules to clarify the application.	
164	8/6.3.7.5	Question	Net web thickness of primary support members	2006/10/9	According the formula of tw-net in Section 8/6.3.7.5 (tw-net=(s/70)(sigma_yd/235)^0.5), the requirment for HT steel is severer than that for mild steel. Is this correct?	The formula is correct. The formula is a slenderness ratio requirement for web plate of primary support members. which is similar to the one given in Section 10/2.3.1.1. Since higher tensile strength steel will be subjected to higher working stresses in general, the required thickness with respect to buckling will be thicker than that for mild steel.	
167	8/1.4.2.6, 8/1.4.2.8	Question	Assessment of compressive buckling strength	2006/10/9	If plate or stiffener locate at just 0.5*D, which criteria (1.0 for above 0.5*D, or 0.9 for below 0.5*D) should be applied?	0.5D position may be included in the group of "above 0.5D". We will consider a Rule change to reflect this.	
171	8/1.1.2.2	Question	Loading conditions to include in Loading Manual.	2006/10/25	Should the loading conditions listed in Section 8/1.1.2.2 be included in the loading manual (Trim & Stability Booklet) as it is? Or, can they be submitted separately only for the approval of ship's strength during the design stage?	The loading conditions and design loading and ballast conditions as indicated in Section 8/1.1.2.2 are, in general, to be included in the Loading Manual. If there are design loading or ballast conditions, which are for design purpose only and are not intended to be used for the actual operation, such conditions shall be submitted for approval of ship's strength during the design stage. Such design loading and ballasting conditions may not be included in the Loading Manual. In such a case, they may be submitted in a separate booklet, but are to be placed onboard the ship. We will consider Rule updates to reflect this.	

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179	Fig 8.2.5, 8/2.5.7.9	Question	Corrugated bulkhead requirements	2006/10/23	Kindly inform us about the background of Tanker CSR Sec. 8.2.5.7.9 (b). In the given example the existing design (corrugated bulkhead without a stool, directly attached to the inner bottom and the hopper plating) shows a thickness of corrugation of 24mm. The inner bottom plating is of 11.5mm the existing hopper plating is of 12.5mm. The example is a 19800 tdw Oil Chemical Carrier.	The requirement of Section 8/2.5.7.9.(b) for inner bottom and hopper plating for corrugation without lower stool is based on the same principle as the requirement for lower stool top plate for corrugation with lower stool as given in Section 8/2.5.7.8.(b), i.e. the thickness and material of the stool top plate is not to be less than those required for the attached corrugation plating. This requirement was originally derived from the existing ABS Rules Pt.5 Ch.1 Sec.4/17.7.1 and IACS UR S18.4.1.(a), and is to alleviate the effect of possible design and/or fabrication misalignment and to provide appropriate load transmission between the corrugation flange/web and the double bottom structure (e.g. bottom floor, girder, inner bottom longitudinals, brackets, etc.).	
180	8/5.2.2.2	CI	Aft peak floors and girders - bracket requirements	2006/10/9	Figure 8.5.1 (b) shows that if the total length lstf-t exceeds 2.5m, bracket is to be fitted at the lower end. In such case, can we also consider the bracket fitted on the back side of the stiffener effective? Or, it is to be considered non-effective in accordance with Section 4/2.1.1.4?	The bracket fitted on the opposite (back) side of the stiffener can be also considered effective for the purpose of this requirement. Please note that Section 4/2.1.1.4 states that the brackets fitted on the side opposite to that of the stiffener are not to be considered as effective “in reducing the effective bending span”. However, this is for reduction of the bending span for the calculation of required section modulus, and is not for the end fixity. Therefore, the bracket fitted on the opposite side of the stiffener may be considered effective for application of the requirements of Section 8/5.2.2.2.	
181	8/3.4.3.2, 8/4.4.2.5 & 8/5.4.3.2	CI	Bending span to calculate web depth of primary support members	2006/10/9	8/3.4.3.2, 8/4.4.2.5, 8/5.4.3.2 require that web depth of deck primary support members is not to be less than 10% of bending span. Can we consider pillar or other rigid structure (e.g. bulkhead fitted above or below the PSM) in the bending span for the proportion requirement?	The purpose of the proportion (depth) requirement is to limit excessive deflection. If a primary support member is partly or fully supported by other rigid structures, e.g. pillars, other intersecting primary support members or strong structures above or below the deck, such effect can be taken into account. Please note that the proportion (depth) requirement can be also demonstrated by "equivalent inertia" in accordance with Section 3/5.3.3.4. And, this "equivalent inertia" can be also demonstrated by "equivalent deflection", i.e. compare the maximum deflection of the member being considered with the maximum deflection based on an equivalent section given by Section 3/5.3.3.4.	

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184	8/4.2.4	Question	double bottom centreline girder	2006/10/25	According to Sec.8/4.2.4, minimum height of double bottom centreline girder is stated with reference to Sec.5/3.2.1. Can the height of the centre line girder be locally reduced below this e.g. in way of sump under main engine or other type of recess arranged in the double bottom?	The double bottom and centreline girder height requirements of 8/4.2.1.1 and 8/4.2.4.1 may be considered as the general requirements for the nominal (regular part) height of the double bottom in engine room. A local sunken inner bottom plate forming a small well or recess (e.g., for arrangement of propulsion main engine), where the double bottom height is lesser than the required height, may be acceptable provided that the overall strength including continuity of the longitudinal members of the double bottom is not thereby impaired.	
187	8/1.1.2.2(c)	Question	Additional design conditions	2006/10/25	Section 8/1.1.2.2(c) specifies “Additional design conditions". 1. Any criteria such as draft, trim, and propeller immersion shall be applied to this condition? 2. Does this condition have to meet the IMO 73/78 SBT condition as mentioned in “Guidance Note”?	1. No. Draft, trim, propeller immersion such as indicated in Section 8/1.1.2.2.(a) and (b) need not be applied in the design ballast condition. 2. No. This condition does not have to meet the IMO 73/78 SBT condition. The "Guidance Note" is to read in the way that, if IMO 73/78 SBT condition uses all the fully filled segregated ballast tanks in the cargo tank region only, such condition can be also used as the design ballast condition as specified in Section 8/1.1.2.2.(c). We will consider Rule updates to improve clarity.	
196	8/3.9.5.1	CI	8/3.9.5.1 Formula	2006/10/25	8/3.9.5.1 Formula for the permissible load on pillar Wpill-perm has wrong numeral condsidering the units: W= 10*A*eta*Sigma should read A*eta*sigma*10-1	Agreed.	

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200	8/1.1.2.2	Question	FPT	2006/11/4	1)It is stated that a fore peak ballast tank is to be full in CSR. However, neither Unified Requirements S11 Rev.5 nor current class rules specify such a requirement. It is not necessary that F.P.T is to be full because the strength is checked in accordance with UR S11. 2) We understand that the purpose of the Loading Manual is to ensure safety operation of a ship in service. However, such a condition that F.P.T is full and propeller immersion is 50 percent might result in the problem for the safety operation and is not appropriate to be included in the Loading Manual. 3) Has the background document including additional information been posted on the web?	These comments came during of hearing for rule change proposal 1, adopted by IACS Council September 2006 and the reply should be considered in that context. 1) The design heavy ballast condition is included in the CSR tanker rule to ensure that master can fill the fore peak tank in heavy weather without exceeding design hull girder bending or shear limits.The yard may specify additional operational ballast conditions for use in heavy weather including empty or partially filled fore peak tank in order to give better propeller immersion.The requirement to include a heavy ballast condition with full fore peak tank is already in the rules and is not proposed to be changed by this rule proposal. You may also wish to refer to the background document which will be posted on the web soon for additional information. 2) The intention of the trim requirement, which is similar to MARPOL Annex I Reg.13, is also for the disposition of the segregated ballast tanks not only for the aggregate capacity. This trim condition implies a safe ballast voyage. If the trim is too large, even if the forward and stern draughts limitations are satisfied, the vessel's bottom forward is likely to have higher probability of having slamming due to ship motion in heavy sea.The trim requirement was introduced at the same time that the partial ballast tank filling was introduced in order to reflect "practical" or ""actual vessel operation" type of ballast conditions. Also, both UR S25 and CSR for Bulk Carrier have the same requirement of trim in both normal ballast and heavy ballast conditions. Although these requirements are for bulk carriers, there should be no difference in this philosophy 3) We expect to post the background document on the web within the end of the year.	
231	8/1.1.2.2	Question	propeller immersion	2006/12/1	Is the propeller to be fully immersed during all ballast exchange procedure on CSR tanker?	Requirements for propeller immersion during ballast exhange are not covered by these Rules. Such operational requirements during ballast water exchange sequences are to be satisfactorily dealt with by the flag Administration or Recognized Organization approving Ballast Water Management Plan.	

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236	8/1.1.2.1	Question	UR S25	2006/11/3	Loading Manual, Heavy ballast conditionIt is difficult for us to understand why the fore peak ballast tank is to be full under heavy ballast condition. In heavy weather, it is very important to keep both forward draft and proper propeller immersion adequate to avoid occurrence of bottom slamming and propeller racing. If the fore peak tank is full, it will be very difficult to make heavy ballast condition with proper propeller immersion. The minimum propeller immersion of 50% prescribed in IACS proposal is shallower than our experience. Propeller immersion of 55-60%, which is deeper than that under normal ballast condition, will be adequate in heavy weather. Therefore, partially filling condition of the fore peak tank should be allowed for heavy ballast condition. Even if the fore peak tank is partially filled, there will be no problem because the strength is checked under the condition of the fore peak tank. Furthermore, the bottom forward structure is reinforced taking account of the shallowest forward draft in the loading manual. Your understanding of UR S25 is not sufficient. In bulk carriers, heavy ballast condition using a deep tank hold is normal in heavy weather. The heavy ballast condition of bulk carriers is equivalent to that of oil tankers. Therefore, this rule change should be reconsidered.	|The design heavy ballast condition is included in the CSR tanker rule to ensure that master can fill the fore peak tank in heavy weather without exceeding design hull girder bending or shear limits.The yard may specify additional operational ballast conditions for use in heavy weather including empty or partially filled fore peak tank in order to give better propeller immersion.The requirement to include a heavy ballast condition with full fore peak tank is already in the rules and is not proposed to be changed by this rule proposal. You may also wish to refer to the background document which will be posted on the web soon for additional information. The intention of the trim requirement, which is similar to MARPOL Annex I Reg.13, is also for the disposition of the segregated ballast tanks not only for the aggregate capacity. This trim condition implies a safe ballast voyage. If the trim is too large, even if the forward and stern draughts limitations are satisfied, the vessel's bottom forward is likely to have higher probability of having slamming due to ship motion in heavy sea. The trim requirement was introduced at the same time that the partial ballast tank filling was introduced in order to reflect "practical" or ""actual vessel operation" type of ballast conditions. Also, both UR S25 and CSR for Bulk Carrier have the same requirement of trim in both normal ballast and heavy ballast conditions. Although these requirements are for bulk carriers, there should be no difference in this philosophy.	
237	8/2.5.5.1 & 8/2.5.5.1 & 8/3.9.2	Question	bending moment factor	2006/11/6	In the CSR, the following bending moment factors(=fbdg) are used for vertical and horizontal stiffeners, respectively a) 12 for horizontal stiffeners (Load distribution is constant) b) 10 for vertical stiffeners(Load distribution is triangle shape)However, it is considered reasonable to apply more appropriate value of fbdg to the stiffeners in lower part of tight bulkhead on which the load of trapezoidal shape works.	The bending moment factor fbdg=10 is kept for the entire bulkhead for simplicity and to keep some margin for additional stresses not accounted for in this prescriptive calculation e.g. stresses induced due to deflection of lower stringer or carry-over bending moment from neighbouring stiffener.	

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254	8/2. 10/2	Question	Enlarged stiffeners	2007/2/23	What criteria are to be applied to the enlarged stiffeners without web stiffening used for PMA?	Enlarged stiffeners (with or without web stiffening) used for Permanent Means of Access (PMA) are to satisfy the following requirements:1) Buckling strength including proportion (slenderness ratio) requirements for Primary Support Members (PSM) as follows: For stiffener web: 10/2.3.1.1(a) slenderness for PSM 10/3.2 plate buckling For stiffener flange: 10/2.3.1.1(b) slenderness for PSM 10/2.3.3.1 tripping brackets For web stiffeners: 10/2.3.2.1 slenderness for Local Support Members (LSM) 10/2.3.2.2 web stiffener inertia 10/3.3 stiffener buckling Note: Note 1 of table 10.2.1 is not applicable. 2) All other requirements for Local Support Members as follows in general (except that PSM (or part of it) is used for PMA platform, for which the requirements for PSM should be applied): Corrosion additions: Requirements for LSM Minimum thickness: Requirements for LSM Fatigue: Requirements for LSM Note: The answer in the previous KC ID 152 is superseded by the above answer.	
260	Table 8.2.7	Question	static load	2006/11/13	In Table 8.2.7, for design load set "8", the load component is "Pin-Pex" and the associated draught is 0,25TSC. According to Table 8.2.8, the design load combination for design load set "8" is "S", i.e. Static.Static load combination is defined in Table 7.6.1 and Pin is defined as being the greater of Pin-test an an other pressure.In the case where the greater is Pin-test, what is the value of Pex to consider: the one corresponding to 0,25 TSC, or another value, corresponding to the draught during testing which could be zero?	0.25Tsc is to be used. This is a simplification of the criteria to cover harbour condition and tank testing condition in one static condition.	
262	8/2.3.1.2	Question	net thickness	2006/12/1	According to Section 8/2.3.1.2, where no intermediate brackets are fitted between the transverses, sa and sb are not to be greater than one-third of the bilge radius or 50 times the applicable local shell plating thickness, whichever is the greater.Is the "local shell plating thickness" as-built thickness? If it is to be "net" thickness, most existing vessels will fail.	"local shell plating" in this paragraph is "net" thickness. However, having investigated the requirement of the maximum stiffener spacing adjacent to bilge, e.g. "sa" and "sb", we also noted that this requirement may become too conservative on some tanker designs. Consequently, we intend to remove this requirement (last part of 8/2.3.1.2) at the next Rule change.	

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263	8/3.2.4 & 8/3.2.5	Question	floor	2006/11/30	8/3.2.4 and 8/3.2.5 state that the minimum depth of the floor at the centreline (as well as a centreline girder, where fitted) is not to be less than the required depth of the double bottom in the cargo tank region.This means that, in case of VLCCs, the depth of the floor at centreline (or girder) must be at least 2.0m. However, we have experiences of successful operation of VLCCs, which do not satisfy this requirement.We would appreciate it if you could add the following sentence, “Less depth of floors and centreline girders may be adopted as long as structural adequacy is demonstrated in terms of stress and buckling through finite element analysis taking account of static and dynamic loads including bottom slamming load.”	We note your comments. We will consider Rule updates to incorporate your comments.	
264	8/6.4.7.2	Question	Plate Panels/Framing	2007/2/20	8/6.4.7.2. requires that, to limit the deflextions under extreme bow impact loads and ensure boundary contraint for plate panels, the spacing ,s, measured along the shell girth of web frames supporting longitudinal framing or stringers supporting transverse framing is not to be greater than S=3+0.008LZ. However, some existing vessels have the spacing greater than that, but don not have any adverse experience, particularly in this kind of empincal and arrangement: requirement, we consider it appropriate and propose to add "in general".	We note your comments. We will consider Rule updates to incorporate your comments.	
285 attc	8/2.6.9	CI	design still bending moment	2007/1/17	Reference is made to CSR tanker rule Sec.8/2.6.9 "Primary support members located beyond 0.4L amidships", a clear understanding is desirable about the span as shown in attached plotter in order to calculate the bending moment and shear force i.e. Mend,Mmid/Qend,Qmid in the formula 2.6.9.2 /3 respectively.	Both the bending and shear spans may be measured between the inner knuckles.	Y
315	8/6.4.5.1 & 8/6.3.5.1	Question	Section modulus	2007/1/5	1. Section 8/6.4.5.1 states "The effective net plastic section modulus, Zpl-net, of each stiffener, in association with the effective plating to which it is attached, is not to be less than”. However, the formula of Zpl-net in Sec. 4/2.4.3.2 does not seem to include the effective attached plating. How to calculate it? 2. Section 8/6.3.5.1 states “The net plastic section modulus, Zpl-net, of each individual stiffener, is not to be less than”. This sentence does not include the wordings “effective” and “in association with the effective plating to which it is attached”. What are eventually different in the actual Zpl-net between 8/6.3.5.1 and 8/6.4.5.1?	1. The effective plating of width equal to the stiffener spacing is implicitly accounted for in the formulation of Sec 4/2.4.3.2. In the formulation for plastic section modulus the plastic neutral axis is assumed to reside in the plating. 2. No difference is intended between 8/6.3.5.1 and 8/6.4.5.1. We will consider making the wording of 8/6.3.5.1 consistent with 8/6.4.5.1.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
320	8/1.1.2.5 & 8/1.1.2.6	Question	UR S11	2007/1/11	S11.2.1.5 in UR S11 (Rev.5) clarifies that stipulations regarding partial filling of ballast tanks in ballast loading conditions (S11.2.1.3) and peak tanks in cargo loading conditions (S11.2.1.4) need not be applied when a vessel is performing ballast exchange using sequential method, i.e. during ballast exchange sequences it will be permissible to have partial filling of ballast tanks without the need for verifying that design stresses are not exceeded in all levels between empty and full. CSR Section 8, 1.1.2.5 and 1.1.2.6 contain, if not the same text, the same requirements as S11.2.1.3 and S11.2.1.4. However, there appears to be no text in the CSR clarifying that these requirements need not be applied during ballast exchange sequences using the sequential method. I presume that there is no intent to have differing requirements in CSR and UR S11.	For design purposes, the current CSR 8/1.1.2.5 for ballast conditions and 8/1.1.2.6 for cargo loading conditions do not necessarily require stress and buckling check at partial filling conditions if the stress levels are below the stress and buckling acceptance criteria for loading conditions with the appropriate tanks full and/or empty. Therefore, the clarification of S11.2.1.5 in UR S11 (Rev.5), i.e. exclusion of sequential ballast water exchange from stress and buckling check at partial filling condition, is not necessary for the current CSR. However, in the future, we intend to update the CSR to make it consistent with the updated UR S11.	
349	8/2.4.1.3	Question	through thickness	2007/2/20	According to Section 8/2.4.1.3, is it necessary to use special material with specified through-thickness properties for inner bottom plate in way of corrugated bulkhead stools?	Section 8/2.4.1.3 states that particular attention is to be given to the through-thickness properties. Consideration to through-thickness properties (use of special material, i.e. Z plate) depends on the level of tensile strain in direction perpendicular to plate and on the plate thickness for avoiding lamellar tearing. See also Section 6/1.1.5 "Through thickness property" and Section 6/5.8,"Weld for structures subject to high tensile stresses". According to the usual building standard, Z plate is generally not requested for the inner bottom plate in way of the lower stool connection.	
350	8/1.1.2.2	Question	propeller inspection	2007/2/20	With respect to propeller inspection afloat condition specified in section 8/1.1.2.2 of CSR for double hull tankers, we would like to have your formal opinion on the following questions referring to the extraction from the original. 'Extraction' propeller inspection afloat condition, in which the propeller shaft centre line is at least Dprop/4 above the waterline in way of the propeller, where Dprop is the propeller diameter. (1) What is the purpose of propeller inspection afloat condition? (For strength check only or to provide the practical condition for propeller inspection afloat under prevailing circumstance) (2) In case the propeller shaft centerline does not emerge by Dprop/4 above the waterline in way of the propeller due to the lack of ballast water capacity in fwd water ballast tanks, is it allowed to fill the cargo tanks with ballast water as necessary on the assumption that oil contaminated ballast water will be processed and discharged in accordance with the relevant regulations of MARPOL ANNEX‡Tat harbor and/or sheltered water? We understand that in no case ballast water shall be carried in cargo tanks except the cases specified in regulation 18.3. of MARPOL ANNEX), however referencing the exceptional cases of regulation 18.3.2 and considering the nature of propeller inspection afloat condition we believe that it will be acceptable to fill the cargo tanks with ballast water temporarily for the given purpose.	1) The purpose is to ensure design harbour bending moment limits allow propeller inspection and it is implicitly assumed this condition will help ensuring that the master has sufficient flexibility for intermediate loading conditions which may be desired in harbour. 2) We agree necessary trim and draughts may be obtained by filling seawater in cargo tanks. In such a case, the maximum weight of water ballast to be put in cargo tanks is to be clearly mentioned in the corresponding load case.	

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390	8/2.6.1.2 & 8/2.6.4	Question	FE analysis	2007/2/20	According to the answer for Question ID: 45, additional structural assessment (FE analysis) against green sea pressure at the scantling draught is necessary for above deck transverse. However I think that we don't need additional FE analysis at the scantling draught for above deck transverse. As you see in Table 8.7.2, the external draught for Shell Envelope is the scantling drought. In general, the scantling drought is the basic factor in prescriptive strength formulations. However, 0.9*Tsc are to be used in FE analyses as given in Appendix B, instead of Tsc. In other words, the draught for local scantlings is Tsc and the draught for FE analysis is 0.9 Tsc. So we don't need additional FE analysis at the scantling draught for above deck transverse. It's not a simple problem to add another loading condition at scantling drought into Table B.2.3. The drought is related to SWBM, SWSF and dynamic load cases.	For primary support members, the CSR requires compliance with the prescriptive requirements as given in Section 8/2.6 and the strength assessment requirements as given in Section 9 and Appendix B (FE Analyses). Both of these requirements are to be independently complied with except that the prescriptive section modulus and shear area requirements may be reduced to 85% provided that the reduced scantlings comply with the FE requirements. As indicated in Section 8/2.6.1.2, however, the prescriptive section modulus and shear area requirements as given in 8/2.6.4.3 and 8/2.6.4.4 are not applicable to deck transverses fitted above deck, and Section 8/7 is to be used instead. Section 8/7 serves as general "tool box" type requirements. Therefore, simple beam analysis or more advanced FE analysis may be used for this purpose. If a FE model is used for this purpose, the FE model used for compliance with Section 9/2 and Appendix B may be also used. In two load cases; green sea at draft (1.0Tsc) and tank pressure with cargo density (1.025) are to be adjusted to make the load compatible with that of the prescriptive requirements. If a simple beam analysis is used for this purpose, Load Model A (fbdg=12, fshr=0.5) in Table 8.7.1 may be used to calculate the bending moment and shear forces at the ends. It is suggested to apply this method since, in general, this method is much easier than FE method. Again, after calculating the prescriptive requirements (based on FE or beam analysis), the required prescriptive section modulus and shear area requirements may be reduced to 85% provided that the reduced scantlings comply with the FE requirements in accordance with Section 9 and Appendix B.	

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392	8/1.1.2.2	Question	SWBM	2007/2/20	[CSR for Tankers Sec.8, 1.1.2.2] In present rule, 'conditions covering ballast water exchange procedures' is described as a subordinate concept of '(a) Seagoing conditions including both departure and arrival conditions'. For the consideration of ballast water exchange in departure condition, additional hogging SWBM will be considered in case of sequential method. It is presumed about 20% more than which is considered in half / arrival condition and all other seagoing conditions. (For handy or Panamax tankers in which hogging is dominant) It is practical that exchange procedures are carried out approaching arrival ports and ballast exchange is carried out under the full responsibility of Captain, it will be reasonable proposal to require ballast water exchange with half and arrival conditions. Suitable notice for bunker conditions may be required in Stability booklets or Ballast water management plan.	The Rules require that ballast water exchange procedures (condition just before and just after ballasting and/or deballasting any ballast tank) are to be included in the loading manual. However, there are no specific requirements about when ballast water exchange operation should be carried out in terms of departure/intermediate/arrival conditions during a voyage. Unless otherwise specifically required by the flag Administration, it should be determined by the designer/builder and/or owners considering the vessel's intended operation.	
399	8/2.5.6.5	Question	web plate thickness	2007/2/20	According to 8/2.5.6.5, where the flange and web plate thicknesses are different, then the thicker net plating thickness is to be as calculated by the formula in this paragraph. Is this requirement applicable to "cold formed corrugation" having the same thickness for corrugation flange and web? If this requirement is to be based on AS-BUILT thickness, presume that this requirement needs not be applied to cold formed corrugation. However, if this requirement is to be based on the REQUIRED thickness, this requirement is to be applied to cold formed corrugation since the local requirements for flange and web are different. Please advise.	This requirement is to be based on the actual thickness, and needs not be applied to cold formed corrugation having the same thickness for corrugation flange and web.	
431	8/2.3.1.2	Question	Adjacent stiffener spacing	2007/5/1	In accordance with 8/2.3.1.2, "a" and "b" in Figure 8.2.1 are generally to be less than 1/3 of each corresponding adjacent stiffener spacing. What's the background of this requirement? What kind of structural problem can we expect In case of a> Sa/3 or b>Sb/3?	The requirements for "a" and "b" (i.e. maximum 1/3 adjacent stiffener spacing) are derived from the existing class Rules (DNV Rules PT.3 Ch.1 Sec.6 C307). The thickness requirement for bilge shell without longitudinal stiffening as given in Section 8/2.2.3.2 is for the buckling strength of unstiffened cylindrical shell against lateral external pressure. Since the formula for bilge shell is applicable for a cylindrical shell having perfect curvature, it is necessary to limit certain irregularity (e.g. flat part "a" and "b" at the connection to bottom and side shell). Therefore, excessively large "a" and "b" may cause buckling problem of the bilge shell.	
433	8.6.2	Question	Hull Girder Stress Direction & Stiffener Flange	2007/5/1	Please confirm whether, in the calculation of Msw-perm-sea, sagging or hogging bending moment is to be used according to direction of sloshing pressure. In case of compressive stress at stiffener flange, hull girder bending moment, which induces compressive stress at same, is to be used.	We confirm that sagging or hogging Msw-perm-sea is to be used so that the hull girder stress direction agrees with the local stress direction at the stiffener flange. We found that the current text "The greatest of the sagging and hogging bending moment is to be used" in the definition of Msw-perm-sea in Table 8.6.2 was inadvertently copied from the same definition in Table 8.6.1, and is not appropriate for stiffeners. We will update the definition as similar to Mv-total in Table 8.2.5 at the next chance of rule change. Until this Rule change, the Msw-perm-sea can be defined as "permissible hull girder hogging and sagging still water bending moment for seagoing operation at the location being considered, in kNm. The sagging or hogging bending moment leading to the maximum combined stress in absolute value at the level of the flange is to be used.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
472	8/2.6.7.1	Question	PMA Requirement	2007/9/4	According to PMA requirement, continuous athwartship PMA is to be arranged on transverse bulkhead at a minimum of 1.6m to a maximum of 3m below the deck head. If such PMA is also supporting the vertical stiffeners on the transverse bulkhead (like other ordinary horizontal stringers), presume that it should have sufficient SM and shear area in accordance with 8/2.6.7.2 and 2.6.7.4. However, it is unreasonable to fit horizontal stringer for PMA meeting the web depth requirement of 8/2.6.7.1. Please confirm that of 8/2.6.7.1 is not applicable to such horizontal stringer fitted near the deck head on transverse bulkhead. Or, is it necessary to make all other structural members satisfactory with ignoring the existence of horizontal stringer for PMA?	Where PMA platform is also supporting the vertical stiffeners on the transverse bulkhead, it should have sufficient SM and shear area in accordance with 8/2.6.7.2 to 2.6.7.5. Section 8/2.6.7.1 is not applicable to horizontal stringer used for PMA platform fitted near the deck head on transverse bulkhead. If all other structural members (e.g. vertical stiffeners and adjacent lower horizontal stringer) are satisfactory with ignoring the existence of horizontal stringer for PMA, then SM, shear area and web depth requirements need not be applied to the horizontal stringer. However, in all cases, minimum thickness (8/2.1.6) and proportion ratio requirements (10/2.3) should be complied with.	
554	8/6.2.5.4	Question	"s_trip" (mean spacing between tripping brackets)	2008/3/6	The Rules specify "s_trip" (mean spacing between tripping brackets) for the calculation of the REQUIRED section modulus of tripping bracket in way of its base. However, the Rules do not specify the effective breadth of the attached plate (web of the primary support member) for the calculation of the ACTUAL section modulus. Please clarify.	It is suggested that the associated plate breadth be a fraction of ltrip. The difference in the section modulus of the tripping bracket will not be significant. It is proposed that that fraction is 1/3.	
556	Section.8/ 1.4.2	Question	Buckling assessment using thickness (tij-net50), using shear force correction	2007/9/3	Please confirm whether buckling assessment (Section 8/1.4.2) is to be carried out using a thickness (tij-net50), using shear force correction. In the assessment of hull girder shear strength (Section 8/1.3.2), tij-net50 is calculated using shear force correction.	The hull girder shear stress to be used for buckling shall be calculated using equivalent thickness of plate tij-net50 as given in 8/1.3.2.2 and including shear force correction. However the buckling capacity shall be calculated with as built thickness minus 0.5tcorr. The rules text will be amended to clarify this.	
561	Table 8.2.1 & Table 8.2.2	CI	Minimum Thickness requirement for Watertight DB floor	2007/9/28	Should the minimum thickness requirements be taken as the greater of Table 8.2.1 and Table 8.2.2 or be applied seperately. Please clarify. Example: Watertight DB floor (using L2=300): LSM Table 8.2.1 = 4.5+0.02*L2 = 10.5mm PSM Table 8.2.2 = 5+0.015*L2 = 9.5mm Is the minimum requirement 9.5mm or 10.5mm?	Both tables are applicable to any structural member that can be located in both tables. So in the example both tables apply to watertight DB floor so the requirement is decided by Table 8.2.1 giving the highest requirement.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
572	8/2	CI	Enlarged stiffeners without web stiffening used for PMA	2007/9/27	Rule Ref.: Text 8/2. 10/2 What criteria are to be applied to the enlarged stiffeners without web stiffening used for PMA?	Enlarged stiffeners (with or without web stiffening) used for Permanent Means of Access (PMA) are to satisfy the following requirements: 1) Buckling strength including proportion (slenderness ratio) requirements for Primary Support Members (PSM) as follows: For stiffener web: 10/2.3.1.1(a) slenderness for PSM 10/3.2 plate buckling For stiffener flange: 10/2.3.1.1(b) slenderness for PSM 10/2.3.3.1 tripping brackets For web stiffeners: 10/2.3.2.1 slenderness for Local Support Members (LSM) 10/2.3.2.2 web stiffener inertia 10/3.3 stiffener buckling Note: Note 1 of table 10.2.1 is not applicable. Buckling strength of longitudinal PMA platforms without web stiffeners may also be ensured using the criteria for LSM 10/2.2 and 10/3.3, including Note 1 of Table 10.2.1, provided shear buckling strength of web is verified in line with 10/3.2. 2) All other requirements for Local Support Members as follows in general (except that PSM (or part of it) is used for PMA platform, for which the requirements for PSM should be applied): Corrosion additions: Requirements for LSM Minimum thickness: Requirements for LSM Fatigue: Requirements for LSM Note: The answer in the previous KC ID 152 and 254 is superseded by the above answer.	
573 attc	8/2 & 8/7	Question	Scantling requirements	2008/3/28	Please clarify which prescriptive scantling requirements apply to deck transverse fitted above upper deck.	Please see attached file: 2.7- (CIP) Common Interpretations April 2008	Y
575 attc	7/4, 8/2, App.B & App.C	CI	Tank approval procedure for cargo tanks	2008/3/28	Please clarify CSR tank approval procedure for cargo tanks design for carriage of high density cargo with partial filling and restriction on max filling height.	Please see attached file: 2.9 - (CIP) Common Interpretations April 2008	Y

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
591	8/6.4.7.5 & Table 2.5.2	Question	"Z sub net50" equation	2007/11/22	The parameter, "C sub s: permissible bending stress coefficient" as defined in 8/6.4.7.5 refers to the acceptance criteria set AC3 in 2/Table 2.5.2, in which the applicable reference for PSM is written as "Plastic criteria". From the appearance of the "Z sub net50" equation in 8/6.4.7.5 and our commonly used engineering assessments, the requirement for member properties of the PSM is to be of an elastic SM. Kindly advise if "Plastic criteria" in the 4th column of 4th entry of 2/Table 2.5.2 is to read "(XX%) yield stress "or"C sub s"in 8/6.4.7.5 is simply to read, "permissible bending stress coefficient=0.8 (without "for acceptance criteria set AC3").	We confirm that "Z sub net50" in 8/6.4.7.5 is to be elastic SM. We intend to fix the Rule text at the next chance of corrigenda.	
597	8/5.2.2.1 & 8/5.2.2.2	CI	Requirements applicable to all aft peak floors	2007/11/16	Interpretation for 8/5.2.2.1 & 5.2.2.2. Are these requirements applicable to all aft peak floors regardless of vertical location & structural arrangement? We understand that the application of these requirements up to the perforated flat if fitted is enough not necessary to apply for all floors.	Stiffening arrangement in 8/5.2.2.1 & 8/5.2.2.2 is to protect against propeller induced vibration and apply to stiffeners on floors in lower bay between shell plate and first deck of perforated flat above top of propeller.	
602	8.3.1, Table 8.4.1& Table 8.5.1	Question	Thickness for superstructure decks	2007/11/24	It appears that the minimum thicknesses for superstructure deck and decks in deck houses have not been defined in Tables 8.3.1, 8.4.1 and 8.5.1. Please advise what minimum thickness requirements are to be applied for such decks. Or, no minimum thickness required?	Table 8.3.1, 8.4.1 and 8.5.1 only apply to structure covered by Section 8 and do not apply to superstructure deck and deck houses.	
606	8/6.3.7.5, 8/6.4.5.4 & 6/3.3	Question	Net web thickness "tw-net"	2007/11/22	1) Presume that the net web thickness “tw-net” used in Sections 8/6.3.7.5 and 8/6.4.5.4 are of FULL corrosion addition (not of HALF corrosion addition). Please confirm. 2) It seems that application of corrosion additions for the proportion (slenderness) requirements in Section 10/2 is missing in Section 6/3.3 while this Section covers all other criteria (e.g. hull girder, local scantlings, minimum thickness, hull girder ultimate strength, FE, backling, fatigue, etc.). Please include proportion (slenderness) requirements in this Section.	1. tw_net is based of full corrosion. 2. Full corrosion addition is to be used for slenderness requirement for primary supporting members	
607	8/6.2.3.1 & 8/6.2.4.1	Question	Indicate the wording "forming tank boundaries"	2007/11/22	8/6.2.3 and 8/6.2.3.1 indicate the wording “forming tank boundaries”. Similarly, 8/6.2.4 and 8/6.2.4.1 indicate the wording “on tank boundaries”. However, understand that these requirements are also applicable to wash bulkhead. Therefore, the wording “tank boundaries” is not appropriate, and to be removed. Please confirm.	We confirm that these requirements are also applicable to wash bulkhead and the wording should be modified.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
705	8/6.2.2.5	Question	Transverse sloshing pressure to vertical webs	2008/5/7	Please clarify how to apply transverse sloshing pressure to vertical webs on longBHDs. According to Sec 8 / 6.2.2.5 (c) transverse sloshing pressure shall be applied, but sloshing pressure due to transverse motion will be on both sides of the web so net pressure is 0.	This is a misprint and transverse sloshing pressure need not be applied on a vertical web frame. The vertical web is parallel to the direction of the liquid movement in case of the transverse sloshing and no significant net pressure will occur on the web.	
706	Table 8.6.4	Question	Direct analysis of slamming pressure	2008/4/16	Table 8.6.4 specifies requirements for direct analysis of slamming pressure on double bottom grillage. The transverse extent of model is to be between inner hopper knuckle and centreline. Is this a minimum extent so that more extensive models, e.g. including hopper tank, can be used?	Table 8.6.4 stipulates what is sufficient to derive Qslm. A more extensive model can be considered.	
714	8/6.3.7.5	CI	bottom floors	2008/11/10	Is the requirement of 8/6.3.7.5 in Rules also applicable to bottom floor located forward of fore peak bulkhead whose frame spacing about 800 mm with solid bottom floor provided at every frame spacing ? Considering the definition of primary supporting member in Table 4.1.1 and similar req't for bow impact region in 8/6.4.5.4 with the spacing req't in 8/3.2.6, it is our understanding that 8/6.3.7.5 is also applicable to the bottom floor for the above mentioned location if it is within the bottom slamming reinforcement zone as shown in Fig. 8.6.4. However, we want clear interpretation from IACS for consistent implementation.	The requirement is also to be applied to bottom floors in the bottom slamming zone.	
732	Text 8/2.1.6.1	Question	Minimum thickness of diaphragms in stools	2008/8/29	Minimum thickness of diaphragms in stools: Where upper/lower stools are provided, vertical webs or diaphragms are arrranged in the stool. However, it appears that there is no minimum thickness requirement for diaphragms. Please clarify the requirement for minimum thickness of diaphragms.	The diaphragms are covered by the requirement to DB Floor/Web in double hull(5.0+0.015L2). We will clarify this in the rules.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
733	Text 8/2.6.1.1	Question	Primary Support Members.	2008/8/28	Figure 8.2.4 shows the depiction of applicable extents of Primary Support Members. According to this Figure, Primary Support Members which are adjacent to Transverse Bulkhead are excluded from the target. Our understanding is that Section 8.2.6 does not apply to Primary Support Members adjacent to Transverse Bulkhead. Please confirm.	1st PSM adjacent to the transverse bulkhead in the cargo tank region Requirements to be applied: Section 8/2.6.4.3, 2.6.4.4 and Section 8/7 The other PSMs in the cargo tank region Requirements to be applied: Section 8/2.6.1.2 to 2.6.1.7 Green sea load is to be applied to the entire cargo tank.	
734	8/6.3.3.1	Question	Net plastic section modulus for bottom slamming	2008/4/24	According to Sec8/6.3.3.1, Sec.4/3.2.3 may be applied to end brackets to ensure end fixity of stiffeners in the bottom slamming region. In this case, is Zpl-net (Required net plastic section modulus for bottom slamming) to be applied as Zrl-net (Net rule section modulus)?	No. The requirements in Section 4/3.2.3 is to be based on Zrl-net.	
735	Text 8/6.3.4.1	Question	plate capacity correction coefficient	2008/8/29	Sec.8/6.3.4, with a plate capacity correction coefficient Cd=1.3, is applied to hull envelope plating within the region of bottom slamming. When bilge plating without longitudinal stiffening is located within the region of bottom slamming, which formula is to be applied? Can a similar correction coefficient Cd=1.3 be applied to the formula specified in Sec.8/2.2.3.2 with a bottom slamming pressure Pslm ?	Section 8/6.3.4.1 is not to be applied to the bilge plating in the bottom slamming region. Satisfactory strength of rounded bilge plate is assumed ensured by the requirement in 8/2.2.3.1 saying thickness of bilge plate is not to be less than thickness of adjacent bottom plate. This means that in case thickness of bottom plate is increased due to bottom slamming then the bilge plate need to be increased similarly. Correction coefficient Cd is not applicable in Section 8/2.2.3.2.	
784	8/2.5.7	CI	finite element analysis	2009/4/8	It is presumed that the requirements for the lower stool top plate and upper stool bottom plate as given in 8/2.5.7.8. (b) and 8/2.5.7.10.(b), respectively, are to be determined based on that required by 8/2.5.6.4, 8/2.5.6.5 and 8/2.5.7 for the attached corrugated bulkhead, i.e. the requirements for the attached corrugation based on the Finite Element Analysis as given in Appendix B need not be used for this purpose (except the case where lower stool is omitted). Please confirm.	The requirements for the attached corrugation based on the Finite Element Analysis as given in Appendix B is to be used when assessing the lower stool top plate and upper stool bottom plate.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
807	Text 8/2.5.7.6	Question	prescriptive calculations of corrugated bulkheads.	2008/8/29	Several parameters have been defined in Sec8/ 2.5.7.6 and Table 8.2.3 for prescriptive calculations of corrugated bulkheads. However, some of these parameters are not constant over the breadth of bulkheads and different values may be adopted through different interpretations. Therefore, it is kindly requested to clarify how to determine such parameters. 1. lcg, lo (defined in Sec8/ 2.5.7.6) In cases where no upper stool is fitted, lcg and lo can be changed due to deck cambers. How should these parameters be determined? a. These parameters are to be determined at the same position as design pressures (at btk/2 from LBHD) and are to be applied to all corrugation units of bulkheads. b. These parameters are to be determined at the positions of those corrugation units being considered. c. These parameters are to be determined at the position which gives maximum values (usually at center line). 2. lib, idk (defined in Table 8.2.3) In cases where cargo tanks, located fore and aft of transverse bulkhead, being considered have different tank lengths, how should the parameters lib and ldk be determined? a. The parameters for the longer cargo tank are to be used. b. The parameters for shorter cargo tank are to be used. c. The parameters for cargo tanks where design pressures are being calculated. d. The average of the parameters for fore and aft cargo tanks is to be used, for lib and ldk respectively..	The parameters should be determined as follows: Item 1(a); Item 2(c).	
829	8/1.1.2.2	CI	heavy ballast condition	2008/9/26	Regarding to the arrangement of F.P.T. and heavy ballast condition required in CSR section 8.1.1.2.2, We would like ask wheather it is acceptable that upper part of fore peak is used as fore peak tank and the lower part of fore peak space is designated as void space under CSR for double hull tankers. It is common to divide fore peak space into upper and lower compartment and to utilize the lower compartment as water ballast tank so as to prevent partial filling in fore peak tank and reduce the excessive hogging moment when fore peak tank is full under IACS UR S11. But, some ship owners seem to prefer upper fore peak tank to lower peak tank if the fore peak space should be divided into two spaces due to the nature of ship design.	The requirements in Section 8/1.1.2.2(a) is specifically towards fore peak tanks designated as ballast tanks. If upper and lower spaces are ballast tanks, the lower is required to be full. If the design has the lower tank designated as void space and the upper is designated as ballast tank then only the upper tank is required to be full and lower void space is empty and vice versa.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
838	8/1.2.2.5	Question	hull girder section modulus	2008/10/14	According to Sec8/1.2.1.3, the hull girder section modulus requirements in Sec8/1.2.3 should apply along the full length of the hull girder from A.P. to F.P. In order to calculate the section modulus outside 0.4L amidship, should the effective deck height as specified in Sec8/1.2.2.5 be applied? If so then which breadth, B(the moulded breadth at midship) or Blocal (the maximum local breadth at the location being considered), should be applied? Please clarify.	In Section 8/1.2.2.5 the breadth should be taken as the local maximum breadth at deck.	
861	8/1.4.2.6	Question	safety factor for plate pane	2009/1/14	For buckling outside of the cargo block (for example in way of the engine room forward bulkhead where stiffening changes to transversely frame) we have received a question as to whether or not the "n" = 0.9 safety factor for plate panels below 0.5D called out in Section 8. 1.4.2.6 applies. Our approach has been to apply this to all structure subject to hull girder loading as Section 8 1.4.1.2 states that hull girder buckling strength requirements apply along the full length of the ship from the A.P. to the F.P.	These requirements apply to plate panels and longitudinals subject to hull girder bending and shear stresses.	
897	8/2.6.4.3	Question	primary support members	2009/3/25	According to 6/3.3.4.2, the sectional properties of primary support members should be based on half corrosion addition. Therefore "Idt", "Ist" and "Ivw" in 8/2.6.4.3 should be changed to "Idt-net50", "Ist-net50" and "Ivw-net50", respectively. Please confirm.	Confirmed. The text will be amended at the first oppportunity.	
909	8/1.6.3.1	CI	hull girder bending stress	2009/3/27	8/1.6.3 Vertical extent of higher strength steel: We have been checking this requirement even for outside of 0.4L area. However, since permissible hull girder bending stress for outside 0.4L area is not 190/k as shown in Table 8.1.3, we checked vertical extent of higher strength steel zone modifying the formula of 190/k1 in 8/1.6.3.1 with the permissible hull girder bending stress at the check point required in Table 8.1.3. Please clarify and change the rule if it is necessary.	For the application of 8/1.6.3.1, the permissible hull girder bending stress for outside 0.4L amidships is to be in accordance with the Table 8.1.3. We will update the Rules to clarify the application.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
916	10/2.3.3.1 & Table 10.2.1 & 8/2.1.4.8	Question	enlarged stiffeners	2009/4/14	The 8/2.1.4.8 (Corrigenda 1 to July 2008 CSR-T) specifies that enlarged stiffeners for PMA should comply with the buckling/proportion requirements for either Local Support Member or Primary Support Member. Particularly against torsional buckling consideration, there are following requirements: 1. For PSM (with web stiffeners) criteria, "tripping brackets" are required in accordance with 10/2.3.3.1. 2. For LSM (without web stiffeners) criteria, "flange width" requirement (bf=0.25dw) is to be applied in accordance with Note 1 in Table 10.2.1. Now, if tripping brackets are provided but without web stiffeners, can the requirement of "flange width" (bf=0.25dw) from Note 1 Table 10.2.1 be waived? The flange that complies with 10/2.3.1.1 (b) will be fitted and the other criteria for LSM will be complied with. Please confirm.	Your proposal is acceptable.	
917 attc	Text 8/5.2.2.1	CI	APT	2009/5/6	In CSR-OT, Sec 8, 5.2.2, requirements for the floors and girders in the aft peak are given. In 5.2.2.1, the minimal height of stiffeners on floors or girders is requested as a function of stiffener effective span; following 5.2.2.2, depending on the stiffener length, “brackets” are to be fitted at the lower end or both, lower and upper end. From CSR-OT technical background, we understand that the principle of 5.2.2.1 and 5.2.2.2 is to increase the structural natural frequency 15% more than the second harmonic excitation (10.6 – 20 Hz, depending of propeller type). However, in order to avoid the increase of stiffener height, an intermediate carling can be used, decreasing stiffener span (see figure attached). The effect will be the increase of the natural frequency. This type of design is not taken into account by the requirements of 5.2.2.1 and 5.2.2.2. Our interpretation is that the design with intermediate carling and with stiffener height lower than 5.2.2.1 is acceptable. Please confirm?	The height of stiffeners less than 5.2.2.1 cannot be accepted with intermediate carling since it is difficult to increase the natural frequency by intermediate carling.	Y
923	Text 8/2.1.4.8	Question	PMA	2009/6/17	Further to the answer of KC916, we have another question. For enlarged stiffeners for PMA WITHOUT web stiffeners, is it possible to apply the applicable requirements of 8/2.1.4.8 (a), (i.e. except the third bullet item for web stiffeners)? Please confirm.	Enlarged stiffeners for PMA without web stiffeners are to follow the requirements as advised in KC ID 916, i.e. other criteria for LSM are to be complied with.	
929	Text 8/2.6.4.3	RCP	deck transverse inertia calcs	2009/7/28	Regarding 8/2.6.4.3 Deck Transverse variables are defined as input values for Inertia values of side transverse and vertical web. Since inertia of actual structure will vary along the span of these members, clarification of the where the inertia and the effective plate is be calculated should be clarified.	The inertia and the effective plate is to be calculated at mid-span.	
935	8/2.6.3.4	CI	side girder shear area	2009/10/23	Double bottom side girder shear area requirement. Is this requirement applicable to the side girder at the hopper tank?	This requirement is not applicable to the side girder under the hopper tank.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
947	8/1.1.2.1	RCP	loading conditions	2009/10/23	With regard to the loading conditions, including both departure and arrival, to be included in the Loading Manual, CSR Tanker Sec.8/1.1.2.2(a) specifies that homogeneous loading conditions at the scantling draft shall not include the filling of dry and clean ballast tanks. However, paragraph 1.1.2.c of the Technical Background for Section 8/1 of CSR Tanker is as follows: "The requirement of not having any dry or clean ballast for the seagoing homogeneous loading condition at scantling draft only applies to the departure condition. Ballast may be used in mid-voyage and arrival conditions to correct the trim due to reduction of fuel oil". Therefore, the application of the requirement is not clear because of the discrepancy between the current requirement and the Technical Background. Our understanding is that it is appropriate to apply the requirement only to the departure condition according to the Technical Background. Please confirm. If necessary, please amend the rule's text to clarify this.	Your proposal has been agreed with. The Rules will be amended at the next opportunity.	
965	Text 8/2.6.4.3	CI	section modulus of deck transverses	2009/9/23	CSR Tanker Section 8/2.6.4.3 states that the net section modulus of the deck transverses in wing cargo tanks is also not to be less than required for the deck transverses in centre tanks. Understand that Sec 8/2.6.4.3 applies to foremost and aftermost tanks region even though span of deck transverse in wing tank become smaller than that of Midship. In this instance, can it be possible to take the actual pressure especially for green sea pressure (P_ex_dt) at each PSM location for the deck structure in foremost tank which gives more accurate results?	The requirements have been developed based on experience gained so far and adjusted based on the calibration with the sample ships. Currently we do not see any compelling need to apply this interpretation. We will however review this request more carefully to understand the full consequence.	
991 attc	8/2.6.4.1	CI	Web depth of deck transverses	2010/3/8	The web depth of deck transverse is to be checked by 8/2.6.4.1 together with CIP-T5 for 3/5.3.3.4. In case the web depth is varying along the span due to interruption by manifold (See attached), mean inertia of moment along the span is to be used considering maximum deflection at mid span provided that the reduced web dept is not more than 50% of whole span. Based on FE analyses this approach found quite reasonable. Please clarify whether the mean inertia of moment (I1+I2 / 2) can be used for calculation of the required equivalent inertia of moment.	The procedure offered in CI-5 item 3 is considered sufficient for this purpose and the mean moment of inertia cannot be used to satisfy the Rule requirement.	Y
992	8/2.6.4.4	CI	net shear area	2009/12/11	In this paragraph the net shear area to be calculated based on both cargo pressure and green sea pressure. For green sea pressure, the requirement should be applicable only for 20% from the end of the whole span since there is no shear force from the side transverse or vertical web frame on the longitudinal bulkheads. There is no shear at the mid span of deck transverse. Please clarify whether shear requirement with green sea pressure should be applied to whole span of deck transverse.	The shear requirement with green sea pressure is to be applied to the whole span of deck transverse. Please also see the Technical Background document on the IACS website.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
993	8/2.6.9.2	CI	section modulus of PSM	2009/12/11	In this paragraph the net section modulus of PSM located outside 0.4L of amidships is to be scaled based on Zmid_net50 (the net section modulus of PSM at amidship). Zmid_net50 should be based on the required section modulus to avoid any confusion with respect to margin with prescriptive and FE. Please clarify whether Zmid_net50 is the required section modulus or offered section modulus.	The requirement in 2.6.9.2 is "scaling" the required section modulus in the midship region to that in the region beyond 0.4L. Hence Zmid_net50 is the required section modulus.	
994	8/6.3.7 & Fig 8.6.5	Interpretation	Bottom slamming for PSM	2010/8/12	Bottom Slamming for PSM: Load Patch which is longer than the half of the bending span, the patch load modification factor distribution (Figure 8.6.5) is not correct. It is proposed that the half length of the bending span is taken for patch load span. Extent of Slamming Patch load bigger than 0.5 l_bdg then l_SLM to be equal to 0.5lbdg.	The harmonisation project is currently ongoing and is considering these requirements. You proposal will be retained and included in the project.	
1008	8/1.3.2.2	CI	Calculation of hull girder shear strength	2010/5/27	In the assessment of hull girder shear strength in section 8/1.3.2.2, the equivalent net thickness should be used when calculating all plate elements' shear capacity. Plate ij is explained in table 8.1.4 as for each plate j, index i denotes the structure member, such as the side shell, the inner hull and the longitudinal bulkhead, of which the plate forms a component. Additional, zp, the calculating position for shear force correction, is taken from the lower edge of plate ij. As stated above, when calculating hull girder shear strength, the elements should be taken as the plate strakes. Furthermore, it is prescribed in section 3/5.1.1.1 that scantlings of plate strakes are to be derived based on element plate panel (EPP). But hull girder shear strength assessment is not in the range of scantlings of plate strakes, and it is not clear if section 3/5.1.1.1 should be applied. Please clarify that hull girder shear strength in section 8/1.3.2.2 should be calculated based on plate strake or EPP. If EPP is chosen, plate ij should be explained as EPP and zp as the lower edge of the considered EPP. And the related rule text should be modified as follows: 8/1.3.2.2 Qv-net50: net hull girder vertical shear strength to be taken as the minimum for all EPP that contribute to the hull girder shear capacity 8/1.3.3.2 zp: the vertical distance from the lower edge of the considered EPP of plate ij to the base line, in m. Not to be taken as less than hdb	The Rules, section 3/5.1.1.1, specifies that plate strakes are to be idealised as EPPs and scantlings derived on the basis of EPPs. Subsequently in the Rules the text always refers to "plating" rather than "EPP" as it us understood, with reference to Section 3, that the calculations are based on EPP.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
1044	8/2.5.7	Question	FEA of lower stool top plate and upper stool lower plate	2010/5/25	Reference is made to KC ID 784. According to the answer, the requirements for the attached corrugation based on the Finite Element Analysis as given in Appendix B is to be used when assessing the lower stool top plate and upper stool bottom plate. However, this interpretation is not clear regarding whether the FEA is only coarse mesh analysis or includes fine mesh analysis. The required thickness for corrugated bulkhead by fine mesh analysis in CSR-T may increase more than that of pre-CSR ship by 10mm or above. We consider that a fatigue strength assessment is need for corrugated bulkheads because most of damages of corrugated bulkheads are caused by fatigue due to stress concentration of the corners of the corrugation according to our experience. Please confirm whether evaluation results can be accepted to determine scantlings of corrugated bulkheads if a fatigue strength assessment is carried out for corrugated bulkhead in accordance with theory of App.C in CSR-T. Please also advise the reason why the corrugated parts are not required to assess the fatigue strength by the Rule. In addition, with regard to the thickness of the stool top plate, our understanding is that it is reasonable to require stool side plate thickness in consideration of the structural continuity with corrugated bulkheads. However, we consider that the thickness of the stool top plate, which does not need to consider structural continuity unlike the case of stool side plates, does not need to have the same thickness as corrugated bulkhead by fine mesh analysis and it is sufficient to be more than the required thickness for corrugated bulkhead by coarse mesh analysis. Please confirm the above.	The Rules stipulate in Section 9/2.3.1.1(d), Fig. 9.2.1 and App.B/3.1.5 that FE fine mesh stress assessment is to be carried out. The fatigue procedure in the CSR Tankers have not been developed and calibrated for the corrugated bulkhead connection to the supporting structure. Consequently the procedure in Appendix C cannot be used to evaluate the fatigue strength of this connection. A detailed design improvement is recommended in the Rules to improve fatigue performance, please see Figure C.2.6. This is considered in addition to the fine mesh stress assessment. The present requirements of 8/2.5.7.10(b) are based on existing text in ABS Rules and are similar to requirements in the Common Structural Rules for Bulk Carriers. Please note that the thickness requirement is primarily experienced based and the stool bottom plate extension requirement is related to having sufficient structure to enable welding of the corrugation to the stool and to provide appropriate load transmission between the corrugation flange/web and the stool. A local fine mesh FE analysis will not address all these issues.	
1073	Text 8/4.3.4.4	RCP	Minimum requirement of web depth	2010/11/4	SECTION 8.4/PAGE 5 4.3.4.4 The web depth is to be not less than 2.5 times the web depth of the adjacent frames if the slots are not closed. Should this clause be The web depth is to be not less than 2.5 times the depth of the slots if the slots are not closed.	Your proposal is agreed with. The Rules will be amended accordingly.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
1079 attc	Tanker 8/2.6.6&7	Interpretation	Alternative primary supporting member arrangement for VLCC whose arrangement is not covered by current CSR.	2010/11/22	Reference is made to alternative primary supporting member arrangement for VLCC whose arrangement is not covered by current CSR. We are considering deep horizontal longitudinal stringer on longitudinal bulkheads in lieu of cross tie which support vertical webs as shown in Fig.1. However, current CSR does not take into account the effect of stringer for the scantling of vertical web and does not offer applicable prescriptive rule for the stringer. In this regard, we would like to propose following procedure for the scantling of such alternative design: 1.Vertical web The scantling will be determined according to current prescriptive rule without cross tie in center tank. However, in this case, the load to stringer obtained by Beam Theory will be applied to stringer as its design load at vertical web positions. And then, the design bending moment and shear force will be reduced considering the effect of stringer. 2.Deep longitudinal stringer The scantling will be determined according to the requirement in 8/2.6.7 of the rule with M(bending moment) and Q(shear force) obtained by Beam Theory for design load as mentioned in 1.	Your proposed approach for scantling assessment is in general agreed with. Section 8/7 for general purpose strength requirements as indicated in 8/7.1.1.1 should be applied to the extent possible. Further we advise that the application of minimum thickness and slenderness ratio requirements in Section 8/2 to PSM should be made. Subsequent FE assessment should also be carried out, and critical locations should be evaluated in fine mesh FEA.	Y
1095 attc	8/6.2.5.3	Interpretation	Definition of effective bending span l_bdg	2011/2/7	The definition of effective bending span l_bdg of Sec8/6.2.5.3 refers to Sec4/2.1 of the rules. In case of the web stiffener is sniped at the end, please confirm which length is to be used among (a), (b) and (c) from attached details.	The full length between supports i.e., (c) should be taken. See also Section 4/2.1.1.3.	Y
1099 attc	8/4.1.1.1	Interpretation	Application of the Common Interpretation CI-T8	2011/4/11	With regards to the application of the Common Interpretation CI-T8, we have an interpretation request which is shown in attachment. Question: 1. Regarding to this tapering requirement, should we use the required t_end at the E.P.P of the panel i.w.o. Machinery Space (Applicable Rule Sec. 8/4 “MACHINERY SPACE”)? 2.Or, should we use the required t_end at the E.P.P of the panel i.w.o. Aft End (Applicable Rule Sec. 8/5 “AFT END”)?	No.2 since intention of tapering is to have reasonable plate thickness transition from midship to aft peak bulkheads at aft end side (Not engine room side).	Y

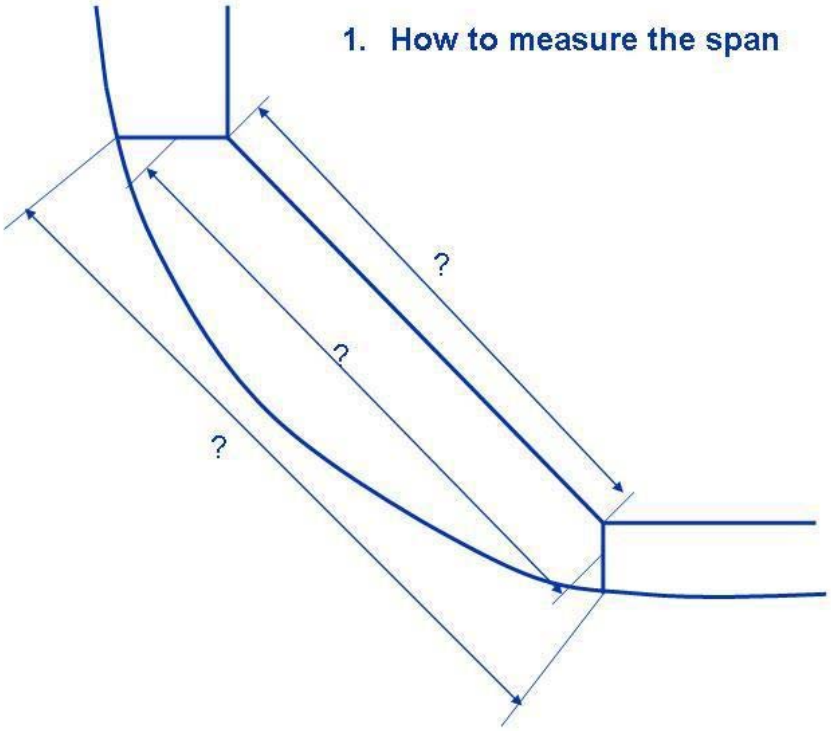
KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
1114	8/5.2.2	Interpretation	Requirement for void space in aft peak area	2012/8/27	Aft peak floors and girders 8/5.2.2. Is this also applicable for void space ?	The requirement is not applicable to void space.	
1131	8/2.5.7.2	Question	Corrugated bulkhead	2013/7/9	We found an editorial error for corrugated bulkhead in CSR-OT rules. CSR-H draft rules is same as this. 1) The Rules are as below at present: CSR-OT Sec8/2.5.7.2 2.5.7 Vertically corrugated bulkheads 2.5.7.2 The net plate thicknesses as required by 2.5.7.5 and 2.5.7.6 are to be maintained for two thirds of the corrugation length, lcg, from the lower end, where lcg is as defined in 2.5.7.3. Above that, the net plate thickness may be reduced by 20%. CSR-H Pt2, Ch2, Sec3 2.2.1 Net plate thickness over the height The net plate thicknesses as required by [2.2.3] and [2.2.4] are to be maintained for two thirds of the corrugation length, lcg from the lower end. Above that, the net plate thickness may be reduced by 20%. 2) Our proposal: CSR-OT Sec8/2.5.7.2 2.5.7 Vertically corrugated bulkheads 2.5.7.2 The net plate thicknesses as required by 2.5.7.5 and 2.5.7.6 are to be maintained for two thirds of the corrugation length, lcg, from the lower end, where lcg is as defined in 2.5.7.3. Above that, the net plate thickness may be reduced by 20% from the net thickness required by 2.5.7.3 for the lower part and 2.5.7.5 for the mid part of the corrugation. CSR-H Pt2, Ch2, Sec3 2.2.1 Net plate thickness over the height The net plate thicknesses as required by [2.2.3] and [2.2.4] are to be maintained for two thirds of the corrugation length, lcg from the lower end. Above that, the net plate thickness may be reduced by 20% from the net thickness required by [2.2.2] for the lower part and [2.2.3] for the mid part of the corrugation. (Continues to the next page)	This question is related to KC ID 128, which confirms that the upper part of the corrugation, with the thickness reduced by 20%, is also required to comply with Sec.8/2.5.7.6. At this time, the CSR-OT rules will not be modified. However, to provide clarity in the rule text, your proposal is being considered by the CSR Harmonization development teams.	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
1131	8/2.5.7.2	Question	Corrugated bulkhead	2013/7/9	(Continues from the former page) 3) Reason 3.1) The rules can be read as that the required net plate thickness in the upper part of the corrugation is to be calculated by 20% reduction from the maximum requirement of net thickness at the mid and lower parts of 2.5.7.5 (this is for the flange plate requirement for mid and lower parts) and 2.5.7.6 (this is for the section modulus requirement of upper, mid and lower parts). 3.2) It is strange that the minimum net thickness is required based on the requirement of section modulus for the mid part. This will give too much extra thickness for the upper part. If they need to give rational and theoretical requirement for robust scantlings at the upper part of the corrugation, the aim can be achieved by 2.5.7.6 for the upper part, which is calculated based on different effective flange area and bending moment coefficient considered for each part appropriately. 3.3) It is understood that the rules is based on ABS rules Pt5 Ch1 Sec4/17.3 as attached. ABS rules say the requirement of upper part is to be calculated by reduction of 20% from the requirement of plate thickness of the flange and web for mid-length and lower end of the corrugation only. This does not refer to the section modulus requirement. 3.4) At that time of draft version of the CSR-OT rules, this requirement did not refer to the section modulus requirement, as below. "2.5.7.2 The net plate thicknesses as required by 2.5.7.5 are to be maintained for two thirds of the corrugation length, lcg, from the lower end, where lcg is as defined in 2.5.7.3. Above that, the net plate thickness may be reduced by 20%." However, when the CSR-OT issued in 2006, editorial modification as adding '2.5.7.6' was made for the purpose of ensuring of the scantling within 2/3 of the corrugation from lower end. However, the following sentence did not considered together with this editorial modification. 3.5) In the technical background for this part of the CSR-OT rules, they refer also IACS UR S18.4.1. It is understood that S18.4.1 says the section modulus of upper part of the corrugated bulkhead is not be less than 75% of that required for middle part. But, this IACS UR S18 requirement should be included in it, because there is no requirement of the section modulus for the upper part in S18. On the other hand, in the CSR-OT rules, a requirement of section modulus for the upper part considering bending coefficient etc at the upper part has been included. 4) Therefore, from the above reasons, we would propose the editorial modification shown in paragraph 2) above, in order to correct application of the rules.	(See the former page)	

KCID No.	Ref.	Type	Topic	Date completed	Question/CI	Answer	Attachment
1133	8/5.2.2.1	Interpretation	Stiffeners arrangement in aft peak ballast	2013/5/21	Application area of CSR OT Sec 8/5.2.2.1 & 5.2.2.2 is unclear even with KC 597. Please confirm if CSR-H application can be used for CSR OT? CSR-H, Ch10, Sec3, 2.2.2: Stiffeners on the floors and girders in aft peak ballast or fresh water tanks above propeller shall be arranged with brackets. This apply for stiffeners located in an area extending longitudinally between the forward edge of the rudder and the after end of the propeller boss and transversely within the diameter of the propeller.	It is acknowledged that the application area of the Rule requirements is defined more clearly in CSR-H. We can confirm that the proposed application area should be used.	

KC#285

Aftmost web frame



CI-T 6 Prescriptive scantling calculation of deck transverse fitted above deck

(Mar. 2008)

Rule Section

8/2.6.1	Primary Support Members/General
8/2.6.4	Deck transverses
8/7	Application of scantling requirements to other structure

Description

Procedure for the prescriptive scantling calculations of deck transverses fitted above upper deck

Common Procedure

The section modulus and shear area criteria as given in Sections 8/2.6.4.3 and 2.6.4.4 are not applicable to the deck transverses fitted above the upper deck. They are to be obtained by the calculation methods as described in Section 8/7 with the following procedure/guidance:

A. Bending Moment and Shear Force:

1. In general Load Model A (fbdg=12, fshr=0.5) in Table 8.7.1 may be used to calculate the bending moment and shear forces at the ends provided that the connection structure between the deck transverse and side transverse (e.g. overlap length and bracket sizes) is considered to be reasonably rigid.

2. If the connection structure between the deck transverse and side transverse (e.g. overlap length and bracket sizes) is not considered to be rigid enough, Load Model B (fbdg=8, fshr=0.63) in Table 8.7.1 may need to be applied to calculate the bending moment and shear forces at the ship centreline end. At the ship side end, Load Model A (fbdg=12, fshr=0.5) is to be applied.

3. Bending moment as calculated in item 1 or 2 may be reduced by 20% to make the bending moment compatible with that required in Section 8/2.6.4.3.

4. The required section modulus and shear area as calculated in item 3 may be reduced to 85% provided that the reduced scantlings comply with the FE cargo tank structural analysis.

5. As an alternative to using Section 8/7, the required section modulus and shear area may be obtained by finite element method (FEM). In this connection, finite element analysis as indicated in Section 9/2 and Appendix B may be used with the following corrections to align with loads used in Section 8/2.6:
   - ship draught of 1.0Tsc to have an envelope value of the green sea pressure. For this purpose, Loading Patters of A1 and A2 in Table B.2.3 and B1 and B2 in Table B.2.4 may be used with modifying the draught from 0.9Tsc to 1.0Tsc.

     Note: Part load conditions (e.g. A4 and A6 in Table B.2.3 and B4 through B6 in Table B.2.4) may create slightly greater internal pressures than that obtained by A1, A2, B1 and B2. However, these part load conditions need not be performed for simplification of the procedure since the differences are negligible.

- cargo density of 1.025 tonnes/m3. For this purpose, ρ_{max_LM} as defined in B/2.4.7.2 is to be taken as 1.025.

B. Distribution of the required scantlings:

1. Deck transverses are forming “transverse ring” of the hull structure together with other transverse primary support members in one cross section. Therefore, in general, the required section modulus and shear area for deck transverses in accordance with Sections 8/2.6.4.3 and 2.6.4.4 are to be constantly applied over the clear of end brackets, i.e. no reduction of the requirements is allowed towards the mid-span except the following cases:
   - In way of centreline, where the scantlings are determined based on the above A.2.
   - Reinforcements are locally applied based on FE cargo tank structural analysis defined in Section 9.2 and Appendix B.

C. Other Criteria:

1. In addition to the section modulus and shear area requirements, the following criteria in Sections 8/2 and 10/2.3 are applicable, and are to be complied with:
   - Minimum thickness (Section 8/2.1.6)
   - Web depth (Section 8/2.6.4.1) (see Note below)
   - Moment of inertia (Section 8/2.6.4.2)
   - Proportion requirements (Section 10/2.3)

2. With regard to the “web depth” requirement (Section 8/2.6.4.1) in item C.1, where it is impractical to fit a deck transverse with the required web depth, then it is permissible to fit a member with reduced depth provided that the fitted member has an “equivalent inertia/stiffness” to that of the required member in accordance with Section 3/5.3.3.4. This “equivalent inertia/stiffness” can be also demonstrated by "equivalent maximum deflection". See separate Common Interpretation / Procedure” for this process.

Implementation date

This CI is effective from 1 April 2008.

Background

According to Section 8/2.6.1.2, the section modulus and shear area criteria for primary support members contained in Section 8/2.6 apply only to the structural elements listed therein. The section modulus and shear area criteria of other primary support members (including deck transverses fitted above upper deck) are to be obtained by calculation methods as described in Section 8/7, which is a “tool box” type section, and is generally applicable where the basic structural configurations or strength models assumed in Section 8/2 to 8/5 are not appropriate.

Consequently, Section 8/2.6.4.3 (bending requirement) and Section 8/2.6.4.4 (shear requirement) do not apply to the deck transverses fitted above upper deck. The following are the main reasons of not applying the bending and shear requirements in 8/2.6.4.3 and Section 8/2.6.4.4:

1. Section 8/2.6.4.3 includes the considerations for “carry-over” bending moment transmitted from the side transverse or vertical web on longitudinal bulkhead to the deck transverse. Since the deck transverses fitted above the deck has in general less degree of connectivity between the deck transverse and side transverse compared with ordinary deck transverses fitted below the deck, the carry-over bending based requirement is not suitable.

2. For shear, in addition to the local pressure based shear force, there is a consideration against hull deformation is included in Section 8/2.6.4.4. This requirement has been calibrated with the ordinary deck transverses fitted below the deck, but not calibrated with the one fitted above the deck. Therefore, the shear requirement in Section 8/2.6.4.4 is not applicable.

CI-T 2 Approval of high density cargo limitation on max filling height

(Mar. 2008)

Rule Section

7/4	Sloshing and impact loads
8/2	Cargo Tank Region
App. B	Structural Strength Assessment
App. C	Fatigue Strength Assessment

Description

What calculation procedure applies for approval of high density cargo with restriction on max filling height?

Common Procedure

Filling height of high density liquid cargo, h_{HL}, is not to exceed the following:

$$h_{HL} = h_{tk}\left(\frac{\rho_{appd}}{\rho_{HL}}\right)$$

where,

h_{tk}: tank height
ρ_{appd}: maximum density approved for full filling
ρ_{HL}: density of intended high density cargo

LSM/PSM pres. requirements (Sec.8/2)
no additional checks (assuming ρ_{HL} results in bottom pressures equal to that resulting from density of sea water)

Sloshing(7/4)
- Density of intended high density cargo at maximum filling height and below to be used
- If multiple densities of heavy cargo are intended, it may be necessary to assess sloshing with multiple densities with each corresponding maximum filling height.

Fatigue assessment
Sec.2/3.1.8.2 cargo density of homogeneous fulload condition at full load design draught, T_{full}, minimum 0.9tonnes/m^3.
The cargo density of 0.9 tonnes/m^3 or the cargo density of homogeneous full load design draught, T_{full}, whichever is greater, is to be used. 2. As specified in Section 2/3.1.10.1.(g), higher cargo density for fatigue evaluation for ships intended to carry high density cargo in part load conditions on a regular basis is an owner's extra. Such owner's extra is not covered by the Rules, and need not be considered when evaluating fatigue strength unless specified in the design documentation.

FE assessment
Additional load cases for reduced filling height of a tank are to be based on the standard load cases (full tank) with the density modified as:
$\rho_{appd} = \rho_{HL} \times (h_{HL} / h_{tk})$

Loading Manual
Maximum permissible filling height of high density liquid cargo is to be indicated in the loading manual.

Implementation date

This CI is effective from 1 April 2008.

Background

LSM/PSM pres. requirements (Sec.8/2):
Based on density of sea water, which gives same pressures (within a small margin) as that of reduced filling, hence no additional calculations necessary

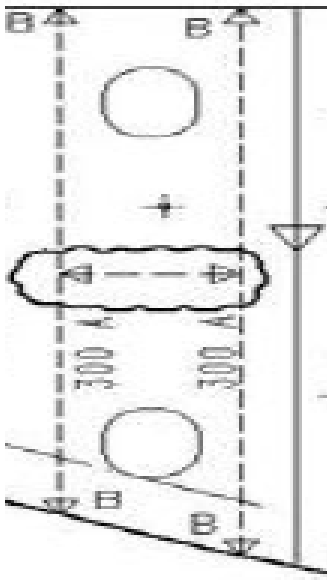
Sloshing
HL filling will give increased sloshing pressures, hence need to be checked

Fatigue assessment
Requirement is given in Sec.2/3.1.8.2. Is normally based on cargo density from loading manual, however it is shown that increased density have no effect on fatigue life (dominated by ballast condition below NA) except from uppermost stiffeners in cargo tank, which will not be subject to pressure due to reduced filling.

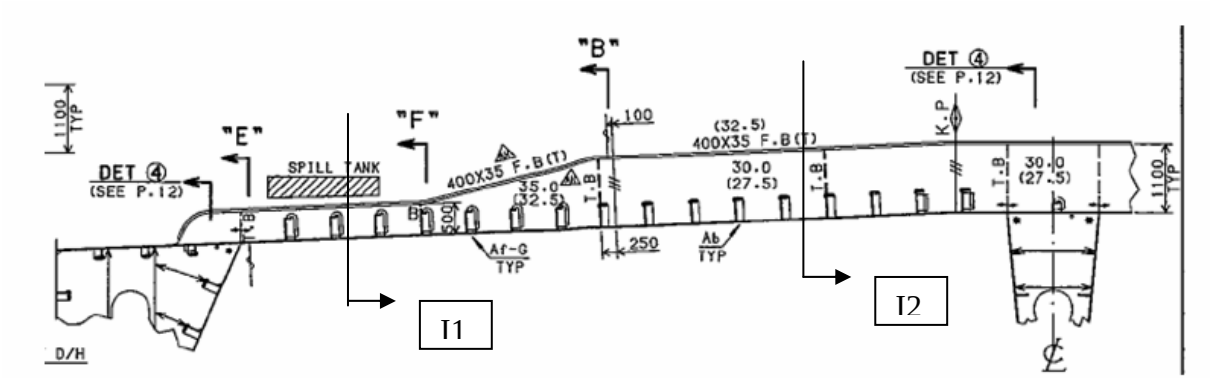
FE assessment
The principle in CSR is that there are predefined load cases and additional load cases need to be added if the loading manual shows more severe conditions than that assumed in the CSR load cases.

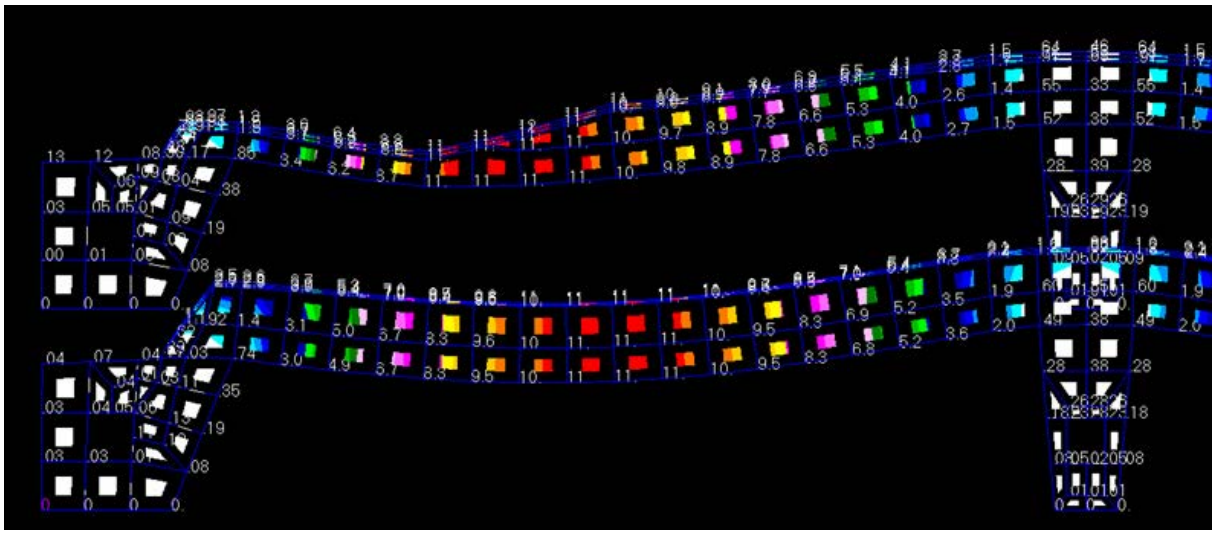
KC#917

Interpretation to CSR-OT, Sec 8, 5.2.2

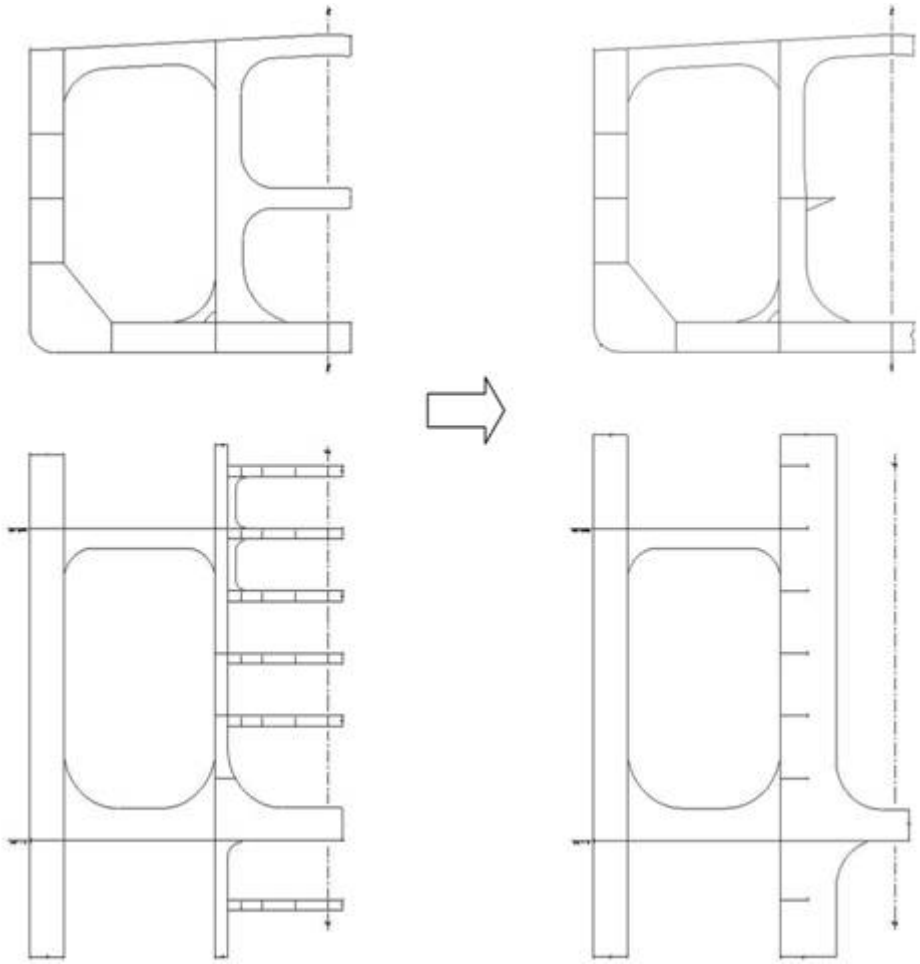


KC#991


"B"
"E"
"F"
DET ④
(SEE P.12)
SPILL TANK
400X35 F.B(T)
(32.5)
400X35 F.B(T)
30.0
(27.5)
100
250
Af-G
TYP
Ab
TYP
K-P
T.B
1100
TYP
I1
I2
D/H

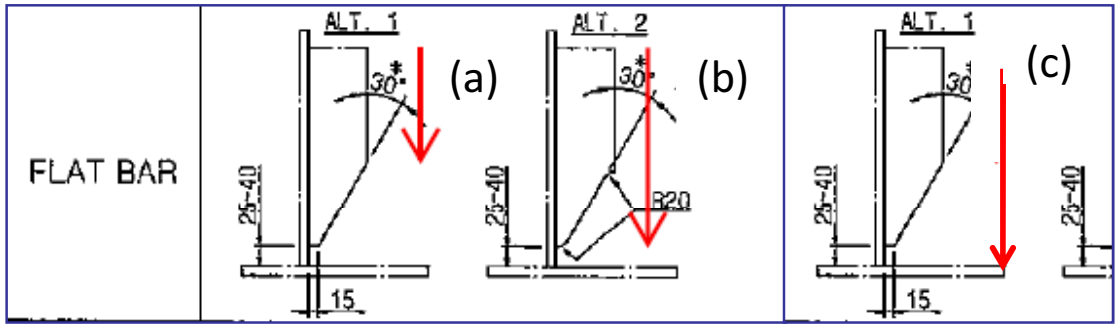


KC#1079



KC#1095

Detail of sniped end for typical flat bar stiffener and extent of stiffener length for Rule requirements.



KC#1099

Interpretation Request

With regards to the application of the Common Interpretation CI-T8, we have an interpretation request as below:

For $t_{end} < t_m$:

$$t_{int} = t_{end} + [(t_m - t_{end}) X_{int}/X_m]$$

For $t_{end} > t_m$:

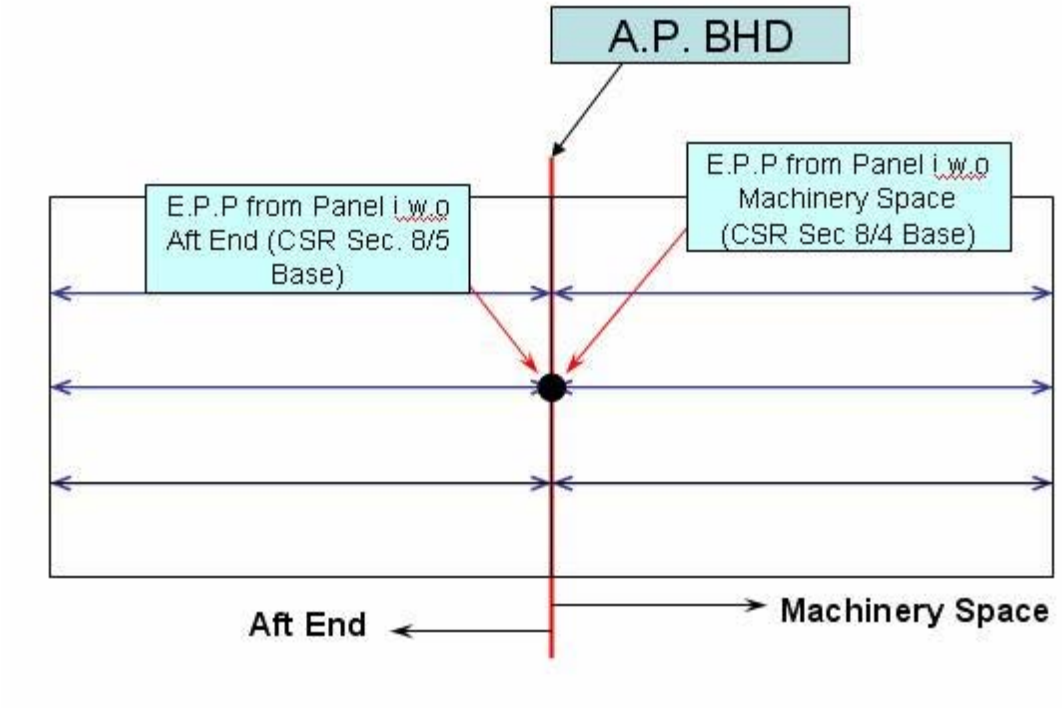
$$t_{int} = t_m$$

t_{int} = net required thickness as defined in Note 1, at the intermediate region (intermediate location being evaluated).

t_{end} = net required thickness as defined in Note 1, at the aft peak bulkhead or 0.1L from the FP

t_m = net required thickness as defined in Note 1, at midships.

As shown on the above, t_end should be used the NET REQUIRED THICKNESS at A.P BHD in the tapering formula.
However, considering the actual structure, a debate are possibly made depending on the considering panels' net required thickness as shown below picture.



Question,

1. Regarding to this tapering requirement, should we use the required t_end at the E.P.P of the panel i.w.o. Machinery Space (Applicable Rule Sec. 8/4 "MACHINERY SPACE")?
2. or should we use the required t_end at the E.P.P of the panel i.w.o. Aft End (Applicable Rule Sec. 8/5 "AFT END")?