Introduction of CSR Rule Change

THE SHIPBUILDERS' ASSOCIATION OF JAPAN

Oshima Shipbuilding Co.,Ltd.

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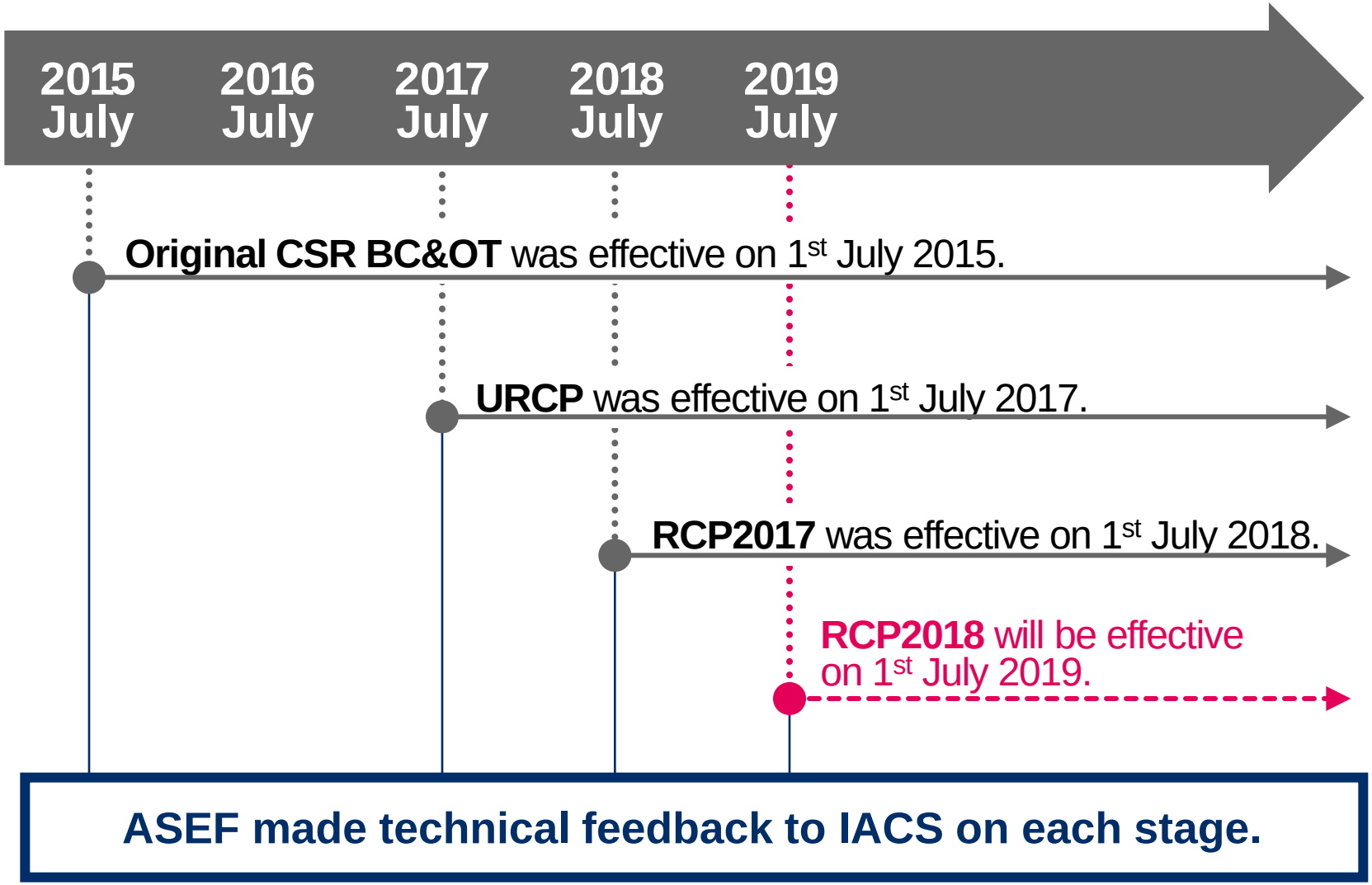
Contents

- **Introduction of Rule Change Proposal 2018 (RCP2018)**

- **Introduction of the problem of Rule Change 2017**

  Expansion of full penetration welding extent

History of CSR-BC&OT



Overview of RCP2018

Rule Change Proposal 2018 (RCP2018)

- 9 proposals
- Mainly the clarification of requirements
- Impact in design works & building work is small
- Impact in hull weight is almost neglect

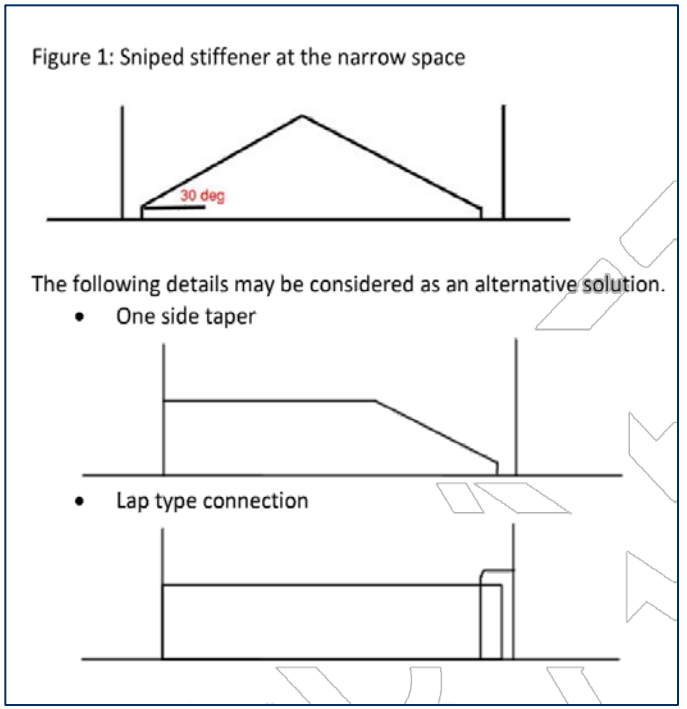
Schedule for application

- Current situation : TC review
- 1st July 2019 : Taking effect

Examples of requirements on RCP2018

1. The clarification of sniped stiffener for BC & OT

- The original rules require that the sniped stiffeners are not to be more than 30degree.
- The original rules require the stiffener to be triangle at the narrow space as shown in left figure.
- RCP2018 consider alternative arrangement for the snipped stiffeners at the narrow space as shown in right figure.



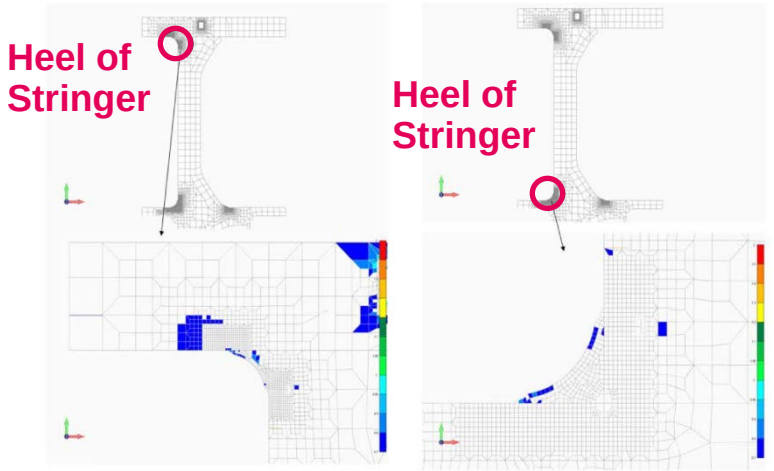
Reasonable & No Impact on Scantling

Examples of requirements on RCP2018

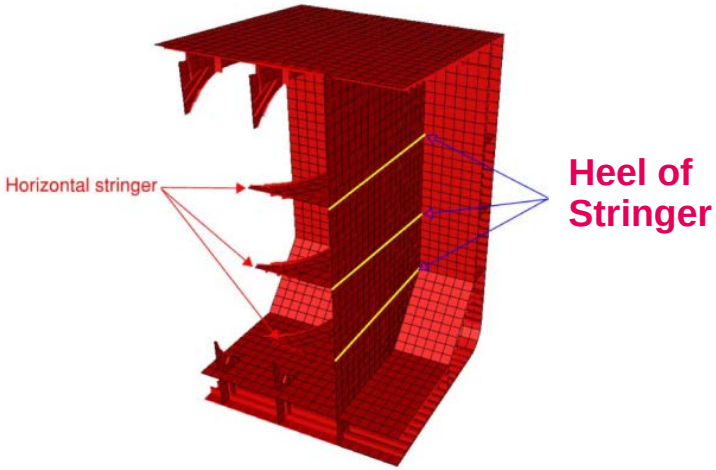
2. Add location of the mandatory fine mesh analysis for OT

Brackets at the heel of horizontal stringer ;

- **Original Rule**
  Fine mesh analysis is **no required**.
- **RCP2018**
  Fine mesh analysis is **required**.



These brackets are usually made for the fine mesh analysis voluntarily by the Shipbuilder.
Although the shape of bracket may need to be improved by results of fine mesh analysis, the impact on hull weight is small.

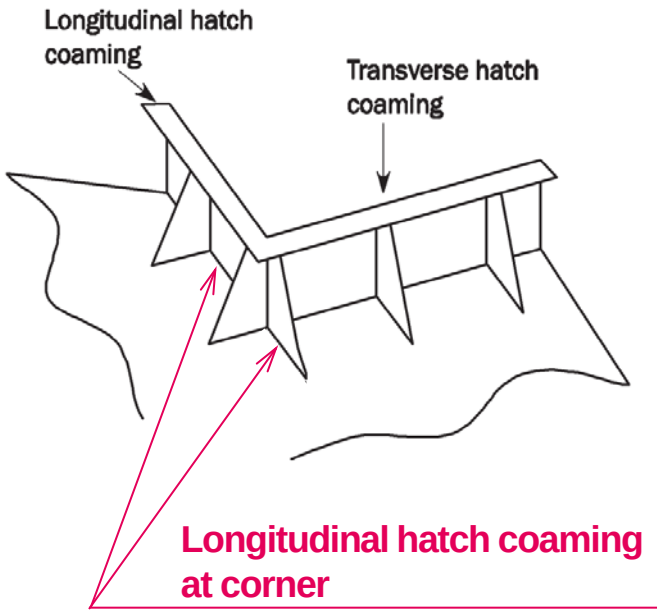


Examples of requirements on RCP2018

3. Full penetration welding at corners of hatchway for BC

The extent of full penetration welding of the connection of the longitudinal hatch coaming to deck plating at corners of hatchway ;

- **Original Rule**
  At corners of hatchways for 15% of the hatch **length**.
- **RCP2018**
  Longitudinal hatch coaming at corners of hatchways on a length of 15% of the hatch coaming **height**.



The extent of full penetration welding is reduced.

Review of RCP2018

- **Mainly the clarification of requirements**
- **Impact in design works & building work is small**
- **Impact in hull weight is almost neglect**

ASEF SWG4 (GBS and CSR maintenance) decided not to send any comment for RCP2018 to IACS.

Rule Change 2017

ASEF sent 2 comments for RCP2017 to IACS in the industrial review period last year.

<u>Overview of RCP which ASEF commented</u>

- **Expansion of full penetration welding extent of Corrugated BHD in cargo hold part**

  ➔ IACS didn't accept ASEF Comments.

  However **IACS will carry out further consideration.**

- **No acceptance for Hatch Cover with continuous skirt plates as supports**

  ➔ IACS accepted ASEF Comments.

Rule Change 2017

CSR-B&T, Pt.1 Ch.12 Sec.3

2.4.5 Location required for full penetration welding

Full penetration welds are to be used in the following locations and elsewhere as required by the rules, see Figure 3:

a) Floors to hopper/inner bottom plating in way of radiused hopper knuckle.

b) Radiused hatch coaming plate at corners to deck.

c) Connection of vertical corrugated bulkhead to the lower hopper plate and to the inner bottom plate within the cargo hold region, when the vertical corrugated bulkhead is arranged without a lower stool.

d) Connection of structural elements in the double bottom in line with corrugated bulkhead flanges to the inner bottom plate, when the vertical corrugated bulkhead is arranged without a lower stool.

e) Connection of vertical corrugated bulkhead to the lower hopper plate, and connection of structural elements in the lower hopper area in line with corrugated bulkhead flanges to the lower hopper plate, where connections are clear of lower stools.

Additional Extension

f~~d~~) Connection of vertical corrugated bulkhead to top plating of lower stool.

g) Corrugated bulkhead lower stool side plating to lower stool top plate.

h) Corrugated bulkhead lower stool side plating to inner bottom.

i) Connection of structural elements in double bottom to the inner bottom plate in holds intended for the carriage of liquid at sea with a distance of ~~150~~300 mm from the side plating of the lower stool, see Figure 3a.

Additional Extension

j~~e~~) Edge reinforcement or pipe penetration both to strength deck, sheer strake and bottom plating within 0.6 *L* amidships, when the dimensions of the opening exceeds 300 mm.

k~~f~~) Abutting plate panels with as-built thickness less than or equal to 12 mm, forming outer shell boundaries below the scantling draught, including but not limited to: sea chests, rudder trunks, and portions of transom. For as-built thickness greater than 12 mm, partial penetration in accordance with [2.4.2].

l~~g~~) Crane pedestals and associated bracketing and support structure.

m~~h~~) For toe connections of longitudinal hatch coaming end bracket to the deck plating, full penetration weld for a distance of 0.15 *Hc* from toe of side coaming termination bracket is required, where *Hc* is the hatch coaming height.

n~~i~~) Rudder horns and shaft brackets to shell structure.

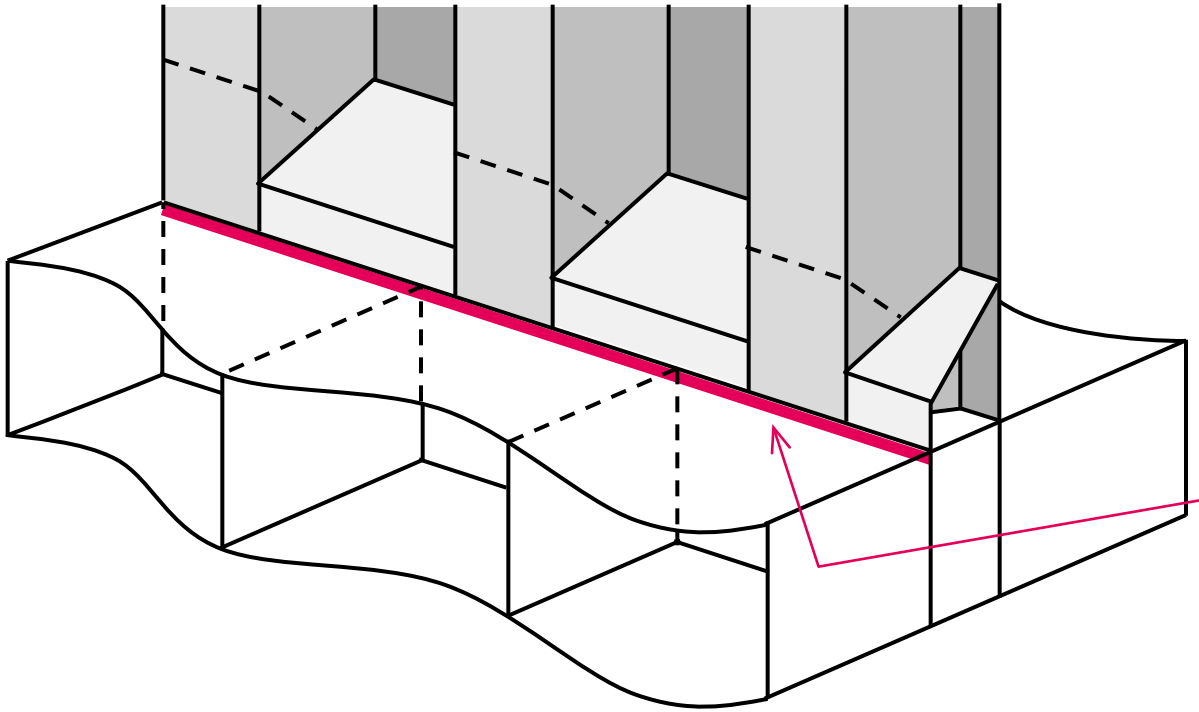
o~~j~~) Thick flanges of long transverse web frames to side web frames. Thick flanges of long longitudinal girder to bulkhead web frames.

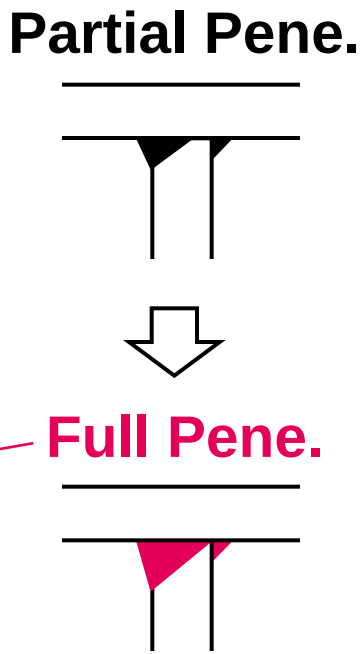
Rule Change 2017

CSR-B&T, Pt.1 Ch.12 Sec.3

2.4.5 Location required for full penetration welding

d) Connection of structural elements in the double bottom in line with corrugated bulkhead flanges to the inner bottom plate, when the vertical corrugated bulkhead is arranged without a lower stool.



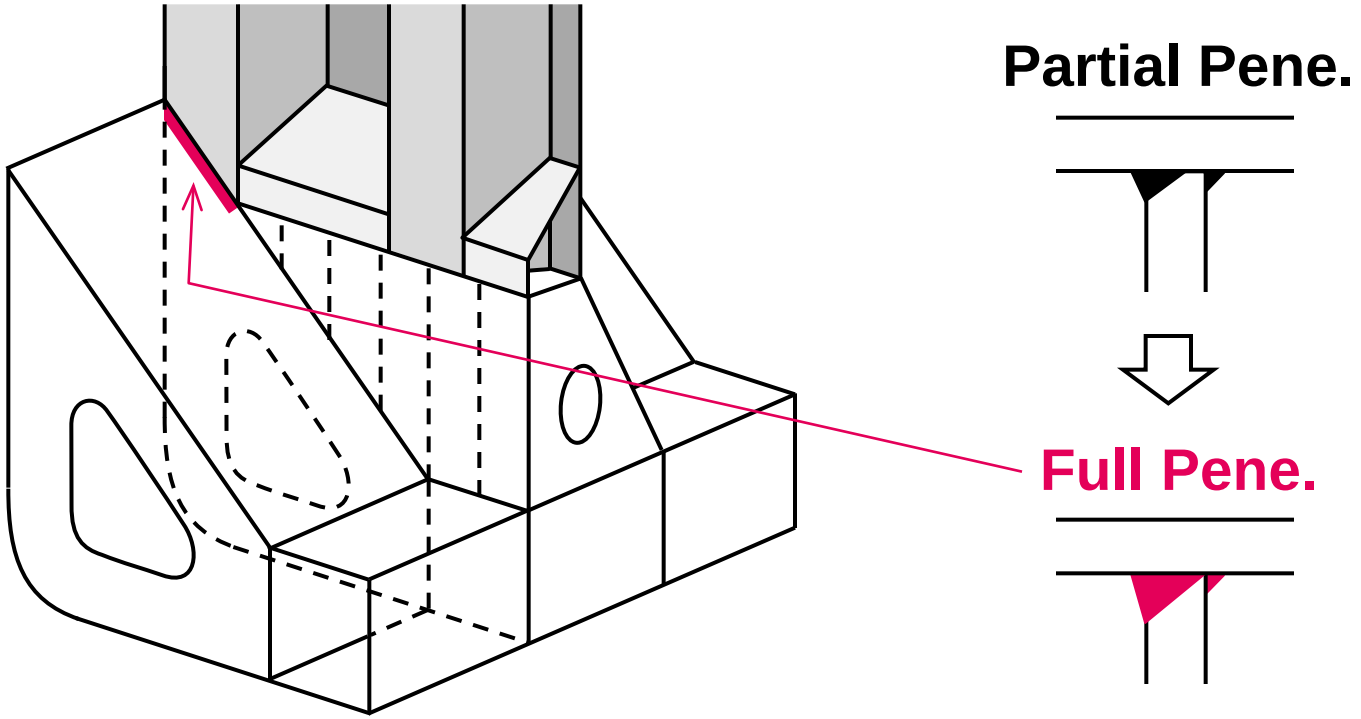


Rule Change 2017

CSR-B&T, Pt.1 Ch.12 Sec.3

2.4.5 Location required for full penetration welding

e) Connection of vertical corrugated bulkhead to the lower hopper plate, and connection of structural elements in the lower hopper area in line with corrugated bulkhead flanges to the lower hopper plate, where connections are clear of lower stools.



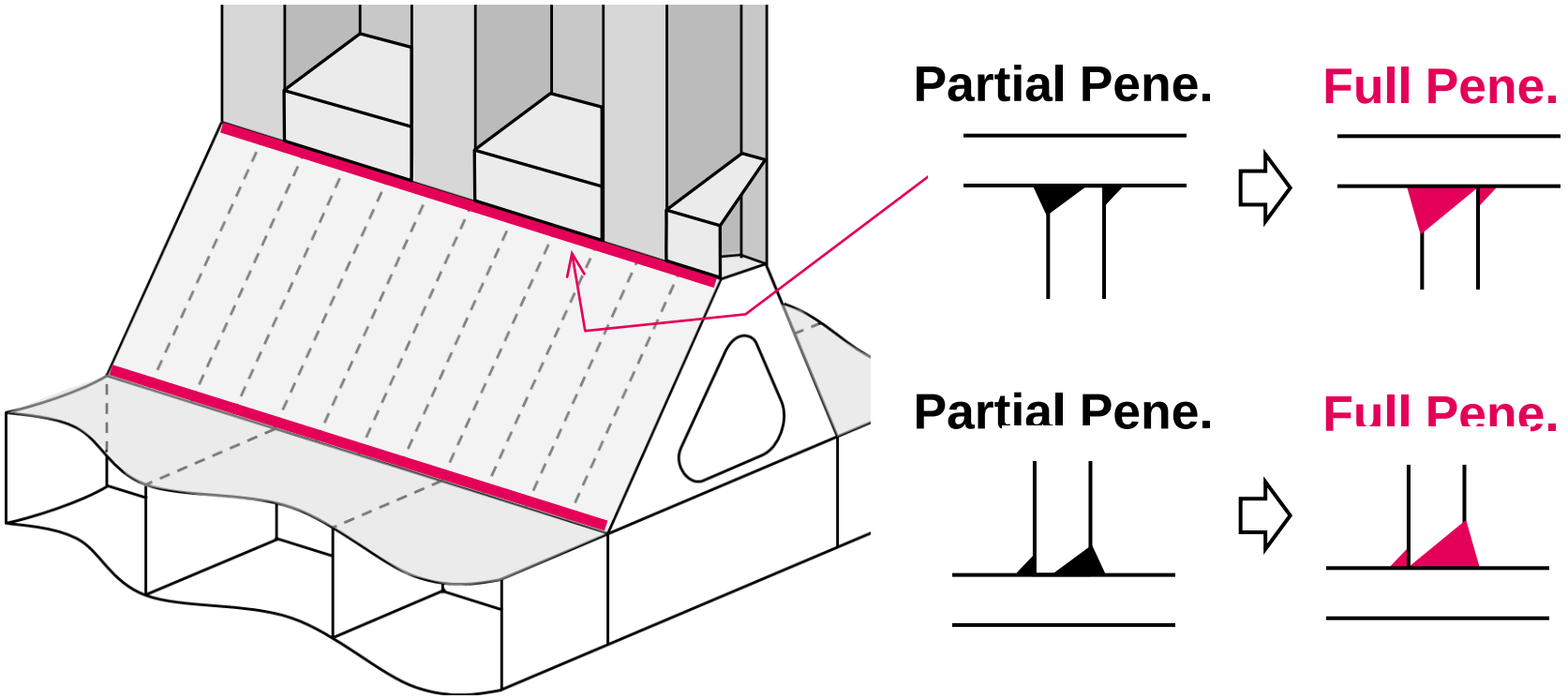
Rule Change 2017

CSR-B&T, Pt.1 Ch.12 Sec.3

2.4.5 Location required for hull penetration welding

g) Corrugated bulkhead lower stool side plating to lower stool top plate.

h) Corrugated bulkhead lower stool side plating to inner bottom.

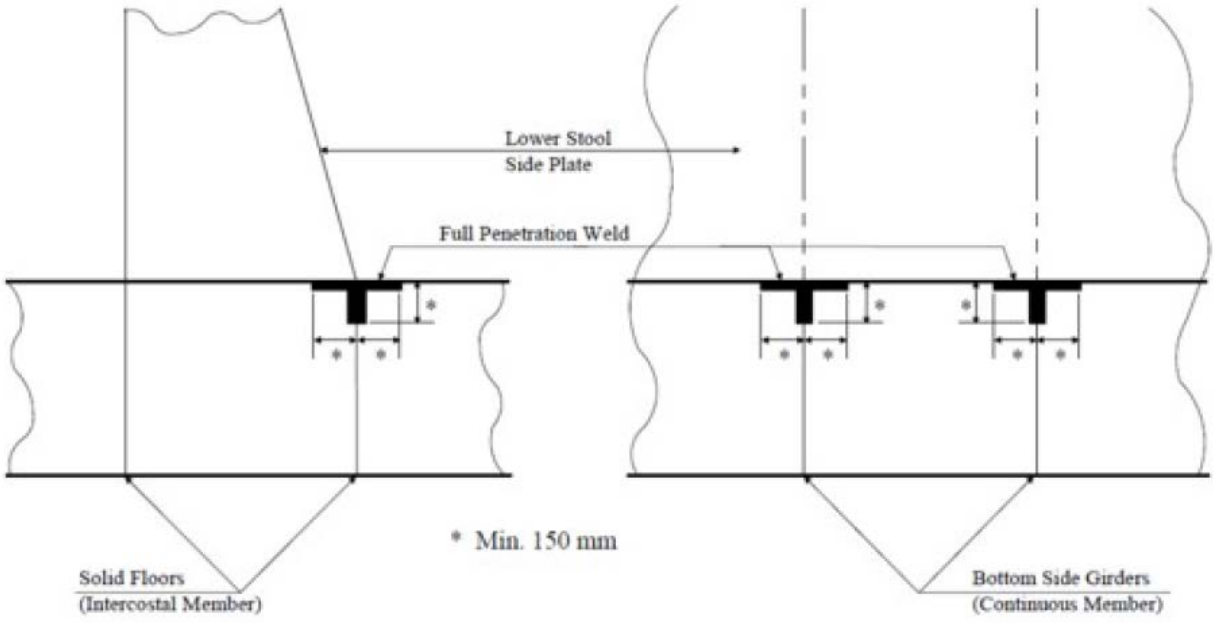


Rule Change 2017

CSR-B&T, Pt.1 Ch.12 Sec.3

2.4.5 Location required for hull penetration welding

i) Connection of structural elements in double bottom to the inner bottom plate in holds intended for the carriage of liquid at sea with a distance of ~~150~~300 mm from the side plating of the lower stool, see Figure 3a.



Min. 150mm

⇩

Min. 300mm

Impact due to this change

Estimated vessel ;

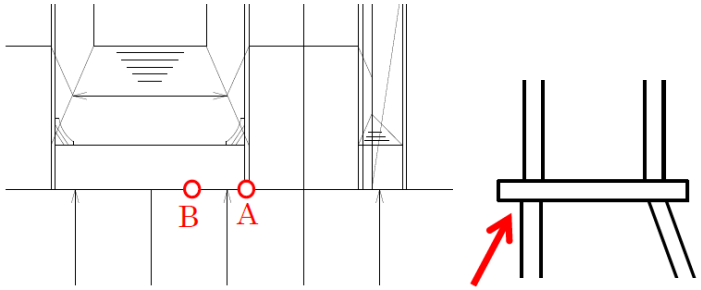
Post Panamax BC, 7 cargo holds, 6 bulkheads

	Original	Revised
Deep Pene.	**490 m**	
Full Pene.	**255 m**	**745 m**

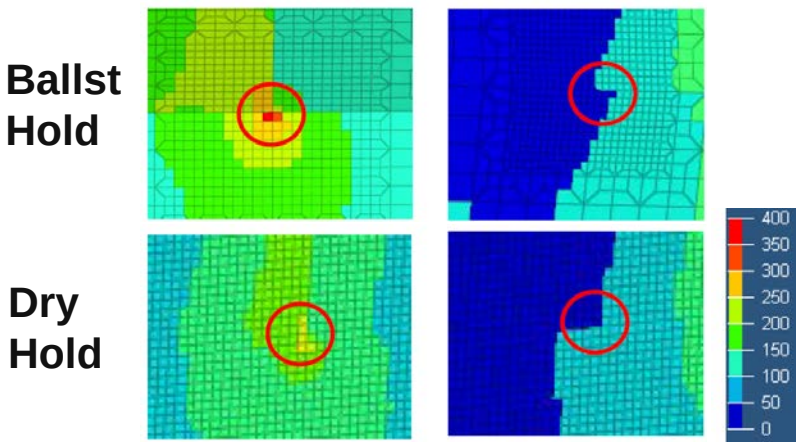
Welding length will triple from the original rules.

Fatigue strength Review

The comparison of fatigue life at the lower stool connection between ballast hold and dry cargo hold of bulk carrier



Stress distribution



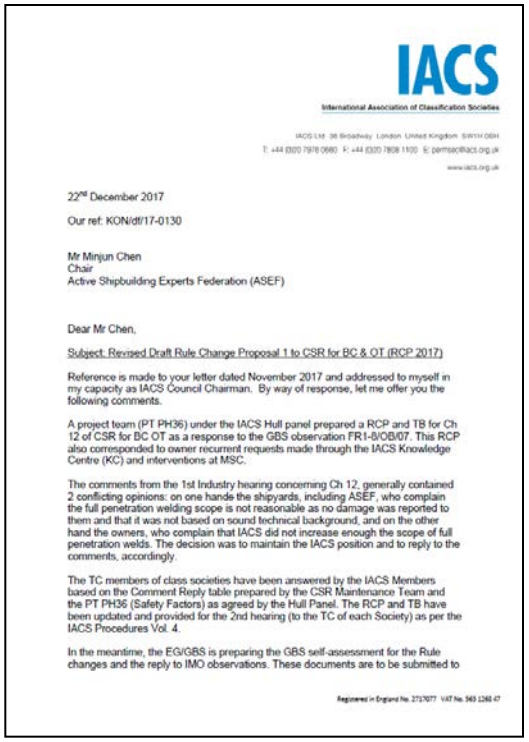
Fatigue life

(The result of the fatigue evaluation in accordance with CSR BC&OT)

Hold	Position	Fatigue Life
Ballst Hold	**A**	**36** years
	B	**1159** years
Dry Hold	**A**	**640** years
	B	**4787** years

Further Action of IACS

IACS reply to ASEF comments for RCP2017



IACS

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22nd December 2017

Our ref: KON/df/17-0130

Mr Minjun Chen
Chair
Active Shipbuilding Experts Federation (ASEF)

Dear Mr Chen,

Subject: Revised Draft Rule Change Proposal 1 to CSR for BC & OT (RCP 2017)

Reference is made to your letter dated November 2017 and addressed to myself in my capacity as IACS Council Chairman. By way of response, let me offer you the following comments.

A project team (PT PH36) under the IACS Hull panel prepared a RCP and TB for Ch 12 of CSR for BC OT as a response to the GBS observation FR1-8/OB/07. This RCP also corresponded to owner recurrent requests made through the IACS Knowledge Centre (KC) and interventions at MSC.

The comments from the 1st Industry hearing concerning Ch 12, generally contained 2 conflicting opinions: on one hande the shipyards, including ASEF, who complain the full penetration welding scope is not reasonable as no damage was reported to them and that it was not based on sound technical background, and on the other hand the owners, who complain that IACS did not increase enough the scope of full penetration welds. The decision was to maintain the IACS position and to reply to the comments, accordingly.

The TC members of class societies have been answered by the IACS Members based on the Comment Reply table prepared by the CSR Maintenance Team and the PT PH36 (Safety Factors) as agreed by the Hull Panel. The RCP and TB have been updated and provided for the 2nd hearing (to the TC of each Society) as per the IACS Procedures Vol. 4.

In the meantime, the EG/GBS is preparing the GBS self-assessment for the Rule changes and the reply to IMO observations. These documents are to be submitted to

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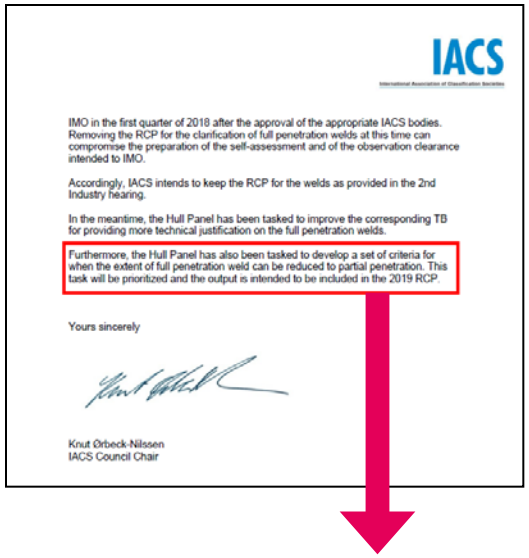

IACS

IMO in the first quarter of 2018 after the approval of the appropriate IACS bodies. Removing the RCP for the clarification of full penetration welds at this time can compromise the preparation of the self-assessment and of the observation clearance intended to IMO.

Accordingly, IACS intends to keep the RCP for the welds as provided in the 2nd Industry hearing.

In the meantime, the Hull Panel has been tasked to improve the corresponding TB for providing more technical justification on the full penetration welds.

Furthermore, the Hull Panel has also been tasked to develop a set of criteria for when the extent of full penetration weld can be reduced to partial penetration. This task will be prioritized and the output is intended to be included in the 2019 RCP.

Yours sincerely

Knut Ørbeck-Nilssen
IACS Council Chair

Furthermore, the Hull Panel has also been tasked to develop a **set of criteria** for when the extent of **full penetration weld can be reduced to partial penetration.**

This task will be prioritized and the output is intended to be included in the **2019 RCP**.

Needs for follow-up by ASEF

ASEF should keep raising the issue of full penetration welding against IACS

- **Should remind IACS to develop a set of criteria for when the extent of full penetration weld can be reduced to partial penetration.**

- **Should remind IACS to include this issue in the 2019 RCP.**

THANK YOU

for your attention.

SAJ 日本造船工業会