THE SHIPBUILDERS' ASSOCIATION OF JAPAN

Shipbuilders' Perspective on the Application of IACS Harmonized CSR

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❖ Current Situation

Current Situation

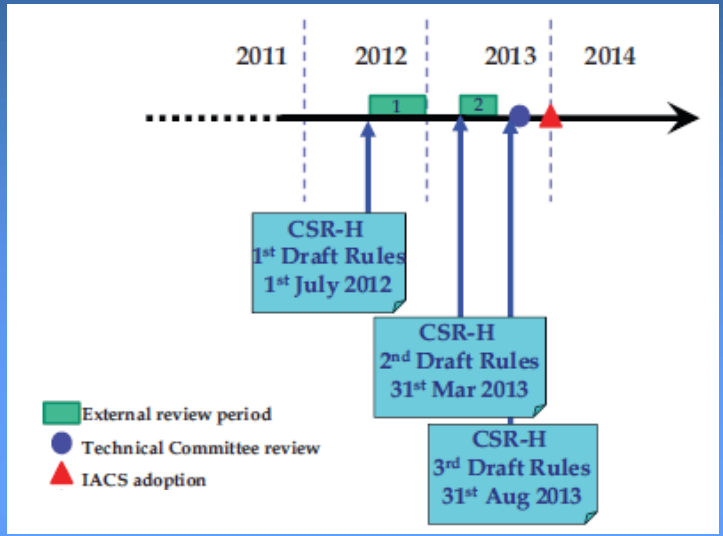
In the ASEF presentation last year, SAJ pointed out that the development of CSR-H is a hard challenge with many hurdles such as:

- Harmonization of the current CSR-O/T and CSR-B/C, necessitating combination of different technical backgrounds.
- Implementation of the requirements of GBS, requiring solution for difficult technological subjects.
- Tight schedule for harmonization work and industries review.

Current Situation

As a results,

- The 1st draft of CSR-H was released in July this year and “External Review” began.



However,,

- The draft texts for the main items revised from the current CSR are **still “In Progress”.**

Furthermore,

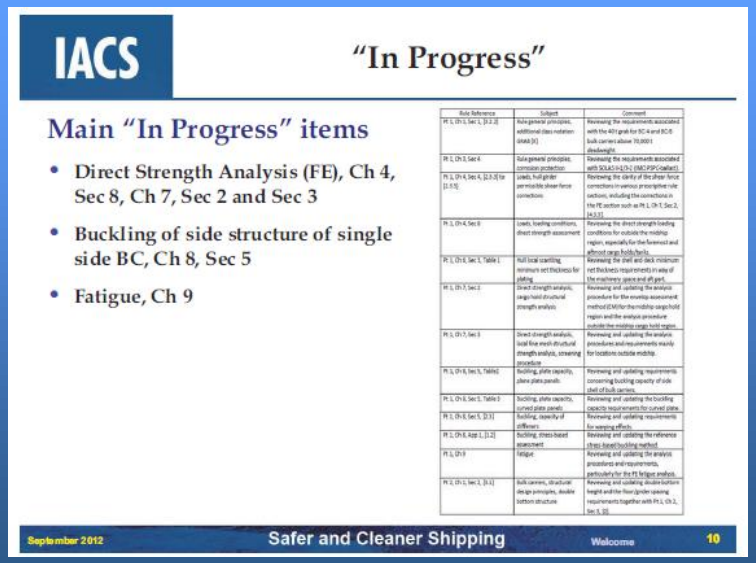
- Technical Background (TB) was unveiled in this month **with several months delay.**

❖ Preliminary comments on CSR-H

1, Delay in schedule

1, Delay in schedule

- The draft texts of the requirements for “Fatigue” & “Direct strength analysis” are still “In Progress”.
- Especially, the newly introduced parts are contained in these items.
- **So the completion of verification work is impossible by the deadline of the 1st External Review**



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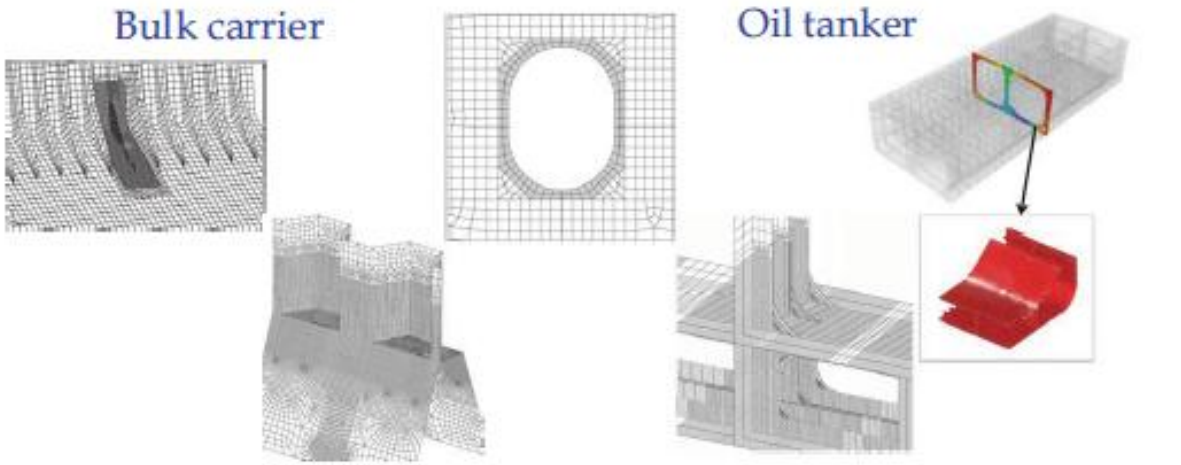
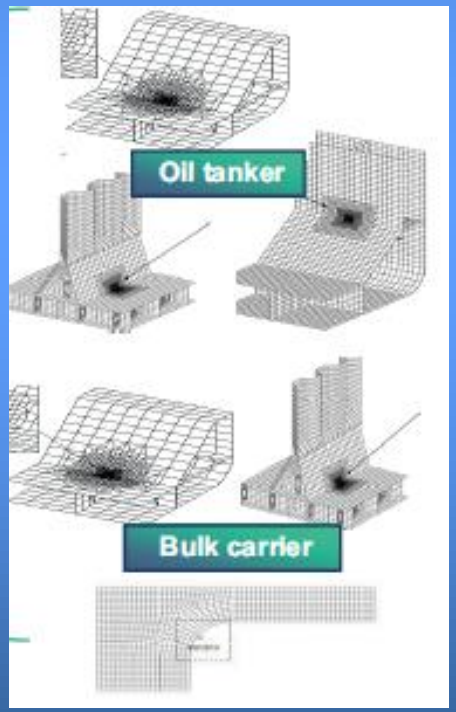
1, Delay in schedule

- **The sufficient analyses and verification will be required for the technically important parts such as Fatigue & Direct strength analysis.**

a) Hopper knuckles
b) Side frame end brackets and lower hopper knuckle for single side bulk carrier
c) Large openings
d) Connections of deck and double bottom longitudinal stiffeners to T/bhd
e) Connections of corrugated bulkhead to adjoining structure





1, Delay in schedule

Therefore

- **The period of 3 months for the 2nd External Review is not sufficient considering for a huge amount of analyses and verification.**

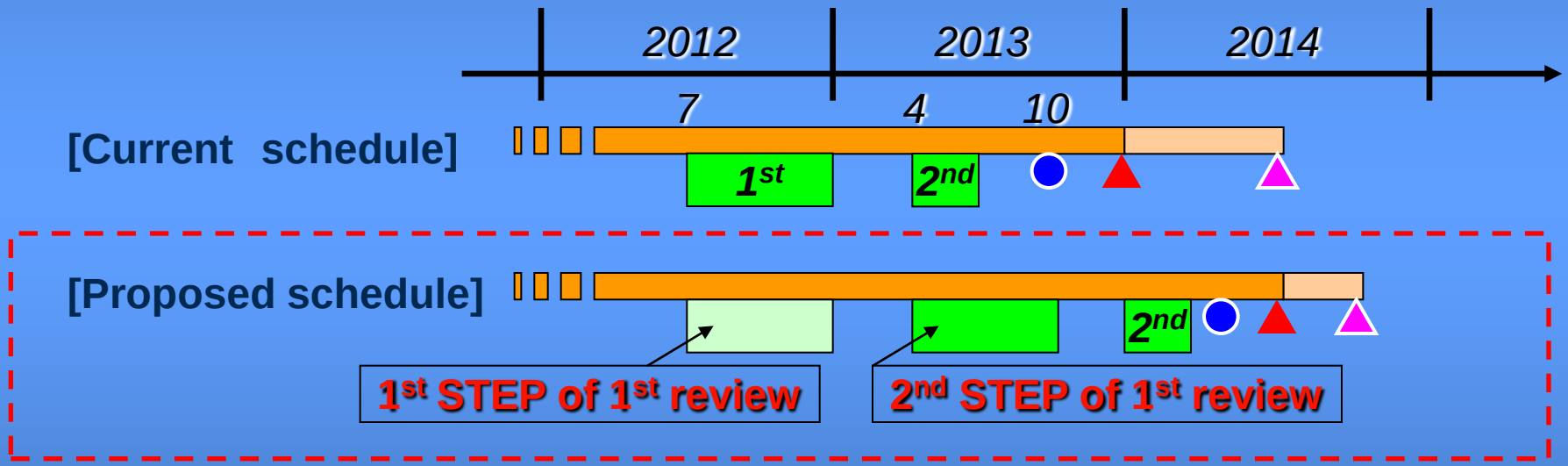
Furthermore,

- **It is questionable that Consequence Analysis works by IACS are enough to justify the newly introduced parts of CSR-H.**

1, Delay in schedule

Finally

- It is requested that IACS will **reconsider the master schedule as shown below.**



IACS internal review period
Extended period
External review period
Technical committee review
IACS adoption
Submitted to IMO

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❖ Preliminary comments on CSR-H

2, Provision of software tool

2, Provision of software tool

- It is obvious that the verification work for CSR-H needs the **special software** provided by the Classification Society.

- This matter has been emphasized by the shipbuilding industry in recent years.

2, Provision of software tool

However

- At this moment, provision of the software tool for CSR-H is **not sufficient**.
- The readiness and promise of each Classification Society **seems to be different and vague**.

Therefore

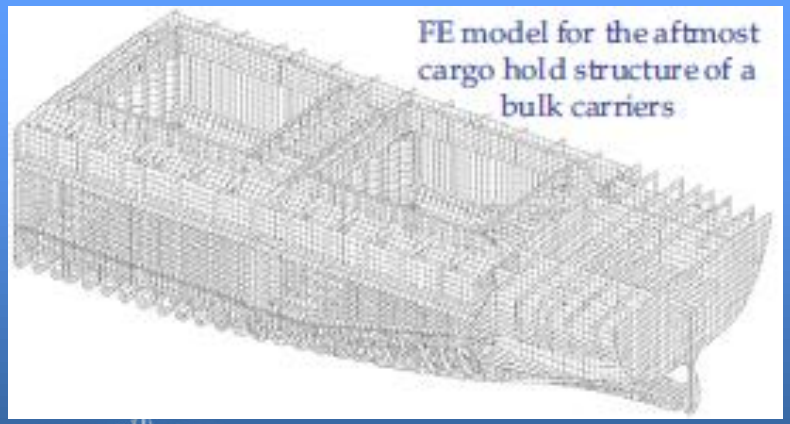
- It is requested that IACS **explain the schedule and the coverage of the software** being developed by each Classification Society at the present moment.

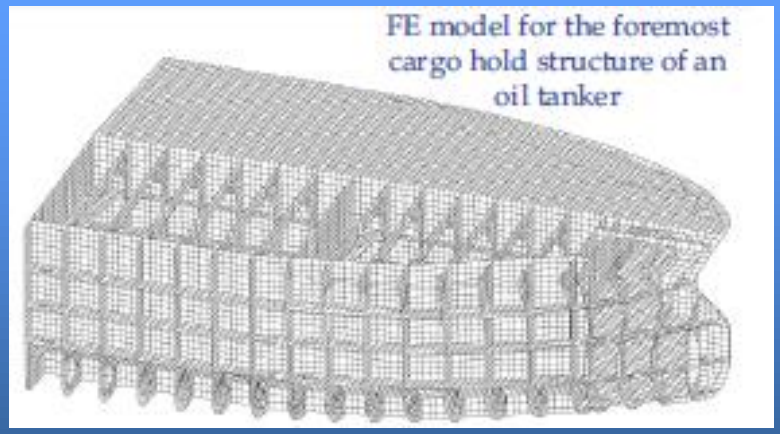
❖ Preliminary comments on CSR-H

3, Economic inefficiency

3, Economic efficiency

- The number of structural details requiring strength analysis is **drastically increased** compared with the current CSR.
- CSR-H requires the Finite Element Analyses not only for cargo holds in midship part of ships but also those **in fore and aft parts.**





3, Economic efficiency

Furthermore

- **Loading patterns considered by FE Analysis are also further increased.**

Finally

- **The number of analyses in CSR-H will be ten to twenty times of that of the current CSR.**

3, Economic efficiency

- The mentioned fact leads to a big increase of followings:
  - **design period and working time** in shipyard

  and finally
  - **designing cost** of bulk carriers and oil tankers.
- It is inevitable for shipyards to include this cost increase to the price of vessels.
- This will make a considerable influence on Shipowners and shipbuilding market.

3, Economic efficiency

As an assumable influence on Shipowners,

- A huge burden due to CSR-H requirements with so many FE analyses will **make difficult for shipbuilders to build and deliver requested vessels timely**, for example,
  - eco-friendly vessels
  - achieving required EEDI/EEOI vessels
  - and so on.

3, Economic efficiency

Furthermore

- **A shipyard makes the calculation sheets of FE analyses with more than 1,000 pages in case of the current CSR.**
- **When CSR-H is introduced, a shipyard should make them with 10,000 or 20,000 pages.**
- **Who can check it all during the limited shipbuilding schedule?**

3, Economic efficiency

It is strongly requested to reconsider:

- Whether the design of bulk carrier and oil tanker **needs so many FE analyses** or not
- Whether so many analyses are necessary to achieve the structural safety of B/C & O/T **to the required level of GBS** or not

At least it is requested that

- IACS will **reduce** the number of the cases requiring FE Analyses **to acceptable degree**

❖ Conclusions

Conclusions

- **Schedule**:
  - IACS should **reconsider the master schedule in view of extension**, especially “External Review” period.
- **Software tool**:
  - IACS should **explain the schedule & coverage of the software** being developed by each Classification Society at the present moment.
- **Economic inefficiency**:
  - IACS should **reduce** the number of FE Analysis cases **to acceptable degree**.

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Thank you for your attention !