

Report to AC

Stability in Waves Committee

Meeting: Sub-committee on Ship Design and Construction (Session 6)—SDC 6

Date: 4–8 Feb. 2019

Location: International Maritime Organization, London, UK

ITTC Participants: Mr. Akihiko Matsuda

SDC 6 Agenda: There was an extensive agenda for the one week meeting of SDC 6, of interest to the ITTC Stability in Waves Committee, was the work of two groups: the Intact stability Expert Group, and the Damaged Stability Working Group. The focus of the Intact Stability Expert Group was the SDC 6 agenda item:

- Finalization of second generation intact stability criteria (SDC 6/5)

For the Damaged Stability Working Group, the SDC 6 agenda items were::

- Review SOLAS chapter II-1, parts B-2 to B-4, to ensure consistency with parts B and B-1 with regard to watertight integrity (SDC 6/4)

Other technical items on the SDC 6 agenda were:

- Revised SOLAS regulation II-1/3-8 and associated guidelines (MSC.1/Circ.1175) and new guidelines for safe mooring operations for all ships (SDC6 /3)

Summary of participation: The ITTC Stability in Waves Committee representatives attended the opening and closing Plenary Sessions of SDC 6, and in between participated in the meeting of the Expert Group on Intact Stability. Much of the effort of the IS Expert Group focused on the finalizing of the Second Generation Intact Stability Criteria.

One of the central issues for discussion was the level of maturity of the vulnerability criteria. Based on extensive sample calculations, it was concluded that vulnerability criteria for parametric roll and for surf-riding/broaching were ready for test application. Multiple inconsistency cases were observed for vulnerability criteria for the rest of failure modes: pure loss of stability, excessive acceleration and dead ship condition. Also it was not clear how the vulnerability criteria for dead ship condition that will have a recommendatory status in the near future will be used together with mandatory weather criterion, Paragraph 2.3 of Part A of the 2008 IS Code. The Expert Group recommended and subcommittee has agreed to go ahead and finalize the vulnerability criteria for all 5 modes of failure, but with understanding that the current level of maturity will be properly reflected in the final documents as well as the relationship between mandatory and recommendatory criteria.

The Expert group has considered in details and finalized drafts for three documents making the

mainstay of the IMO Second Generation Intact Stability Criteria:

- DRAFT INTERIM GUIDELINES ON THE SPECIFICATION OF DIRECT STABILITY ASSESSMENT PROCEDURES, in Annex 1 of SDC 6/WP.6
- DRAFT INTERIM GUIDELINES FOR THE PREPARATION OF OPERATIONAL LIMITATIONS AND OPERATIONAL GUIDANCE in Annex 2 of SDC 6/WP.6
- DRAFT INTERIM GUIDELINES ON VULNERABILITY CRITERIA FOR THE SECOND GENERATION INTACT STABILITY CRITERIA in Annex 2 of SDC 6/WP.6

The Expert group agreed that these documents contain all necessary technical information and require editorial work by the Intersessional Correspondence Group. The final touch is expected to be done by the Drafting Group at SDC-7 in 2020. Upon completion, and following approval by the subcommittee, the three guidelines will be forwarded to Maritime Safety Committee (MSC) for their approval and publication in a form of MSC Circulars for test application by the Maritime Industry

This IMO development is well aligned with a number of ITTC aims, making ITTC participation in this development very relevant. In particular, finalization and test application of the IMO Second Generation Intact Stability Criteria have been and will continue to stimulate improvement of methods for numerical modeling of extreme ship motions. In pursue of this aim ITTC has a chance to have a positive impact on this international development that may improve ITTC's stance.

In the onion of the ITTC representative, the matter of particular relevance are:

- Physical background of the IMO criteria (SiW Committee TOR #3)
- Development of new ITTC procedures for computational method for direct stability assessment (SiW Committee TOR #4); this procedures may include, but not limited to extrapolation, statistical validation, direct counting and proper environment modeling
- Roll damping (SiW Committee TOR #5 and 6)
- Parametric roll (SiW Committee TOR #7)
- Validation issues are related to model test procedures "Recommended Procedures, Model Tests on Intact Stability," 7.5-02-07-04.1" issued in 2008 and "Captive Model Test Procedure 7.5-02-06-02" issued in 2014. These procedures are properly cited in SDC 6/WP.6.

Action requested of EC/AC:

To note the above information and approve further development in support of finalization and test application of the IMO Second Generation Intact Stability Criteria.