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GUIDELINES FOR UNIFORM OPERATING LIMITATIONS OF HIGH-SPEED CRAFT

Submitted by the Royal Institution of Naval Architects (RINA)

SUMMARY

Executive summary:	This paper identifies subjects for discussion in relation to this new work item
Action to be taken:	Paragraph 22
Related documents:	MSC 81/25; DE 49/5/3 and DE 49/INF.5

Introduction

1 The text of the Code of Safety for High-Speed Craft incorporates various measures that determine the limits within which a high-speed craft is considered to be safe to operate. This new work item has been established (see paragraph 23.45 of MSC 81/25) in order to draft guidelines for Administrations so as to encourage the consistent determination of operational limitations.

2 This paper suggests some aspects of this new work item for consideration by the Sub-Committee. It has been prepared after seeking the views and agreement of national groups representing the naval architecture profession.

3 Reference should be made to DE 49/5/3 and DE 49/INF.5, which introduced this subject for consideration.

Safe handling limitations

4 Many forms of high-speed craft may have safe handling limitations as suggested in 17.5.4.1 of the Code, for example:

– vulnerability to bow diving or plough-in.

– avoidance of excessive bow-down trim in order to preserve safe manoeuvring behaviour – see clause 17.2.1 of the 2000 HSC Code.

5 Chapter 17 of the 2000 HSC Code requires that safe handling limitations are determined by full scale tests supplemented by model tests where appropriate, as described in Annex 9, and documented in the Craft Operating Manual. Sometimes such documentation may need to be reinforced by warning plaques.

6 RINA is aware that the full scale tests required by Chapter 17 are frequently not conducted. Guidance on the conduct of such tests and on when model tests or mathematical simulations may be alternative options would seem to ensure a more consistent application of the Code.

Wave height limitations

7 Clause 18.1.3.2 of the 2000 HSC Code requires that the Administration be satisfied that the operating conditions on the intended route are within the capabilities of the craft. This is usually determined during the tests conducted in accordance with Annex 9 and invoked by clause 17.2.1. However RINA is aware that often full scale tests are not conducted at all.

8 Specific guidance on the conduct of such full scale tests and on when model tests or mathematical simulations may be alternative options would seem to ensure a more consistent application of the Code and invoked by clause 17.2.1.

9 Some Administrations set a fixed significant wave height limit regardless of the heading of the craft relative to the sea. However clause 3.1.2 of Annex 9 of the 2000 HSC Code explicitly states that "*worst intended conditions, referred to in 1.4.57 of this Code, are those in which it shall be possible to maintain safe cruise without exceptional piloting skill. However, operations at all headings relative to the wind and sea may not be possible*".

10 RINA suggests that as it is often safe in following or beam seas to exceed the limiting wave height established in head seas, some agreed form of presentation of wave height information should be established. Some alternatives are illustrated in DE 49/INF.5 for consideration.

Discretionary aspects

11 Clause 1.4.61, in defining the Worst Intended Conditions, gives Administrations discretion to include other parameters in the Permit to Operate. The following issues may need consideration for inclusion in the new guidelines, in order that when appropriate such factors are considered in determining operating limitations.

Wash wave restrictions

12 Many Administrations are now aware that high-speed craft are capable of creating wash waves that are hazardous to nearby small craft and persons on the shoreline. Where such a hazard can be anticipated, any restrictions on craft routing, course alteration positions or speed in relation to water depth in order to avoid excessive wash waves should be addressed in the Permit to Operate.

13 In some Member States, the Administration requires that a risk assessment of the wash wave hazard is conducted before a Permit to Operate is issued.

14 It is suggested that guidance on this issue should be included in the planned guidelines.

Navigational safety

15 A substantial number of high-speed craft groundings and strandings have occurred because insufficient safety margins have been included for unintended deviations from the planned route, for example the *Sea Cat* (1991), *Catamaran 1* (1992), *Delfini XVI* (1993), *Condor 11* (1994), *Saint Malo* (1995), *Sleipner* (1999), *Baronen* (2000), *SNAV Alexa* (2001) and *Flying Dolphin XXIV* (2003) incidents.

16 It is therefore submitted that the guidelines should draw the attention of Administrations to the need to conduct a risk assessment of the navigational passage plan, and if necessary in critical areas to place operational restrictions in the Permit to Operate regarding, for example requiring a reduction in speed, the presence of two navigators in the control position and/or a minimum planned distance off grounding hazards.

Departure sea conditions

17 Clause 1.2 of the 2000 HSC Code includes the following statements:

> *.5 the craft will at all times be in reasonable proximity to a place of refuge, having due regard to the provisions of 1.3.4;*
>
> *.6 adequate communications facilities, weather forecasts and maintenance facilities are available within the area of craft operation*.

18 Clause 1.3.4 gives time limits for passenger craft (4 hours) and cargo craft (8 hours) for the passage to a place of refuge when proceeding at operational speed (90% of maximum speed when fully loaded). This is to allow the craft to safely retire to shelter in the event of changes in the weather and hence sea state.

19 Similarly the reason for clause 1.2.6 (above) is to ensure that the crew have ready access to weather forecasts, so that if necessary a decision to take refuge may be taken at an appropriate time.

20 Notwithstanding these provisions, it is not hard to foresee situations where the forecasts of sea conditions are not sufficiently accurate or the weather changes more rapidly than was anticipated. For this reason, some Administrations may wish to stipulate that the wave height conditions on departure should be such as to permit the craft to complete its passage without relying on a drastic reduction in speed, thus increasing the exposure of the passengers and crew to progressively more severe conditions.

21 It is submitted that this aspect could also be addressed by the planned guidelines.

Action requested of the Sub-Committee

22 The Sub-Committee is invited to note the information above, and take action as deemed appropriate.

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