Guidelines for the Calculation of Percentage of Propeller Immersion

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Details:	Guidelines for the calculation of Percentage of Propeller Immersion
Former Notice:	NA
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1 PURPOSE

The purpose of this guidance note is to provide a standardize interpretations on how the percentage of propellor immersion is to be calculated for MWPA. Whilst there may be other examples of this defined elsewhere and online, at MWPA propellor immersion is considered from a ship handling perspective and the information in this document is to be used.

The following indicates what is expected by MWPA from Ship Masters when determining and advising this information.

2 REQUIREMENTS

At MWPA the aft draft of a vessel considered as standard shall have a Propellor Immersion of a minimum 110%.

A vessel with a propellor immersion of between 100% and 110% may be considered to berth with winds less than 23 kts and in daylight.

At MWPA a vessel with an aft draft that has a propellor immersion of less than 100% is considered a non-routine and if the vessel is unable to amend the aft draft, MWPA will require a vessel specific risk assessment by the Marine Team and Harbour Master approval.

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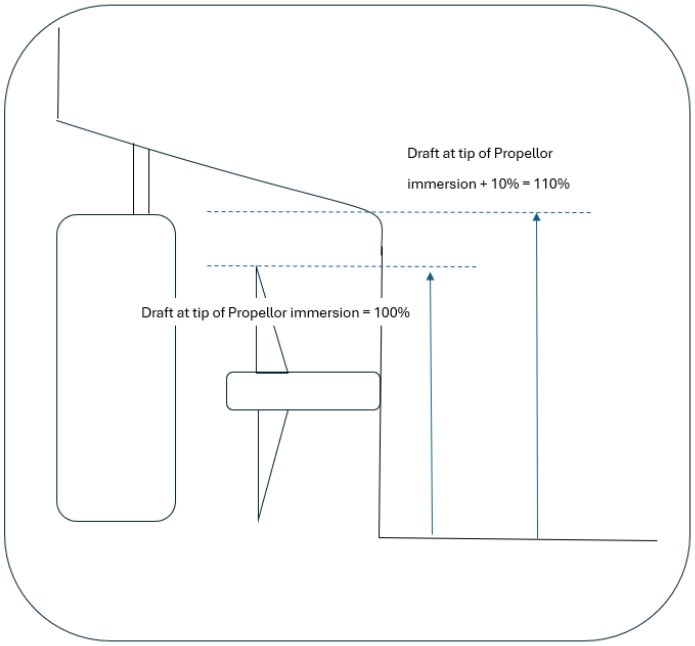
3 DEFINITION

100% propellor immersion is when the tip of the propellor is just covered by water, when the ship is at rest in a calm state and not in motion in a sea or swell.

110% propellor immersion is 100% Propellor Immersion draft + 10% of that draft.



4 FORMULAE

AD / ADATOP x 100 = % PI

or

Actual aft draft / aft draft at tip of the propellor x 100 = % propellor immersion

Note 1: ADATOP = aft draft at tip of the propellor.
PI = Propeller Immersion
AD = Actual aft draft

Note 2: This requires the Master to provide both aft drafts.
(i) Actual aft draft and
(ii) Aft draft at design when tip of the propellor is fully immersed.

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5 EXAMPLES

5.1 Examples 1

A ship has an aft draft that just covers the tip of propellor at 5.2m.

- The ship has an aft draft of 5.0m. This would be considered 96% propellor immersion. This draft is non-standard and requires a vessel specific risk assessment.
- The ship has an aft draft of 5.2m. This would be considered 100% propellor immersion. This draft may be considered in daylight and with winds less than 23 kts.
- The ship has an aft draft of 5.46m. This would be considered 105% propellor immersion. This draft may be considered in daylight and with winds less than 23 kts.
- The ship has an aft draft of 5.72m. This would be considered 110% propellor immersion. This draft is considered acceptable and standard MWPA environmental conditions apply.

5.2 Examples 2

A ship has an aft draft that just covers the tip of propellor at 7.0m.

- The ship has an aft draft of 6.5m. This would be considered 93% propellor immersion. This draft is non-standard and requires a vessel specific risk assessment.
- The ship has an aft draft of 7.0m. This would be considered 100% propellor immersion. This draft may be considered in daylight and with winds less than 23 kts.
- The ship has an aft draft of 7.4m. This would be considered 106% propellor immersion. This draft may be considered in daylight and with winds less than 23 kts.
- The ship has an aft draft of 7.7m. This would be considered 110% propellor immersion. This draft is considered acceptable and standard MWPA environmental conditions apply.

Any questions or feedback regarding this Harbour Master Instruction should be addressed to the Mid West Port Authority Marine Operations Team at shipping@midwestports.com.au

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