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**IMPA Notice: 984**

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Dear Colleagues,

**SECURING PILOT LADDERS AT INTERMEDIATE LENGTHS**

Enclosed with this Notice is the report produced by technical consultants nC<sup>2</sup> from the University of Southampton on securing pilot ladders at intermediate lengths. nC<sup>2</sup> performed laboratory-based testing, analysis and evaluation of sample lengths of pilot ladders secured in a variety of methods. The work was broken into the following packages

- **WP1 Baseline testing.** To determine the baseline response to loading of manilla and polypropylene ropes, with and without ladder fixtures.
- **WP 2 Slip/grip testing.** To determine the slip/grip performance of common methods for securing pilot ladder at intermediate lengths.
- **WP 3 'D'-Shackle testing.** To determine the effect of cyclically loading D-shackles on pilot ladder components.

Members' attention is drawn to the recommendations in section 7 of the report, developed following consultation with the IMPA Safety Sub-Committee. For ease of reference, this section is reproduced as an annex to this Notice.

The Executive Committee has approved the report.

The results will be incorporated into the IMPA approach to the IMO's work to revised SOLAS regulation V/23 and its associated recommendations, and into the work of the IMPA group revising the Ladder Poster.

**Action: Members are invited to note the information provided and to give the recommendations in the report the widest possible dissemination amongst their memberships and national stakeholders.**

Yours sincerely,

Matthew Williams  
Secretary General

## Excerpt of Section 7 of the NCC Report

### Recommendations

A summary of the findings from this work is given in Table 8; included within this is a final column commenting on the recommendation for use. Note that even the 'best' ranking solution.

tested had limitations/conditions of use. Notwithstanding the methods for securing pilot ladders considered in the Study, an alternative method may be the optimal solution for securing.

a pilot ladder at an intermediate length. A securing clamping or other device or mechanism specifically designed for the purpose and combining the favourable characteristics of the methods tested in the study could be the optimal solution. The favourable characteristics are:

1. The same or better holding performance as a rolling hitch;
2. None of the potential for damage to the structure and critical components of a pilot ladder caused by D-shackles; and
3. A D-shackle's ease of use (unconditional holding performance).

*[Table 8 is reproduced on the following page]*

**Table 8: Summary of findings from this study.**

<b>Method</b>		<b>Force achieved without slippage</b>	<b>Damage</b>	<b>Ease of use</b>	<b>Special considerations</b>	<b>Recommendations</b>
D-shackle	27mm	2.8kN (maximum applied force)	Yes: to critical components of the pilot ladder	Very easy and quick	D-shackles may be considered an attractive securing option for personnel charged with rigging pilot ladders due to their ease of use. However, D-shackle use was demonstrated to transfer loading to the components of the step assembly resulting in damage to the structure and critical components of the pilot ladder.	Not recommended for use due to impact on ladder structure
	36mm					
Cow Hitch	Manilla, Polypropylene securing rope	<0.5kN (average)	No damage to the structure and critical components of the pilot ladder	Simple knot, low skill level	The cow hitch method did not damage the structure and critical components of the pilot ladder. However, the cow hitch method was demonstrated to deliver the worst holding performance of the three securing methods. The cow hitch always slipped, coming to rest on the step assembly – resulting in the undesirable situation where all the forces are concentrated on the step assembly.	Not recommended for use due to poor holding performance
	Lifting strap					
Rolling Hitch	Manilla, Polypropylene securing rope	2.2kN (average)	Signs of squashing and discolouration on side ropes, but no material damage was observed	Complex knot, high skill level. Requires a pre-load before use to ensure superior grip force	The rolling hitch method resulted in signs of squashing and discolouration on side ropes, but no material damage was observed. The rolling hitch demonstrated holding performance which was at least 77% better than a cow hitch. However, the superior performance of the rolling hitch is conditional on the knot being tied correctly and being pre-loaded before use. If either of these pre-conditions is not met, the rolling hitch has the holding performance of a cow hitch.  Of the material combinations tested, the least effective holding performance (rolling hitch) occurs when both side ropes and secure ropes are made from polypropylene.	Recommended for use but holding performance is conditional