Fig. 1 Cradle system during a model test

A standardised Launch & Recovery system is a step closer with LAURA JIP

There is an evident trend towards fewer, but multifunctional, navy platforms capable of (international) cooperation that are operated by smaller crews. These trends pose new challenges for the design and operation of naval platforms.

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Missions nowadays are increasingly dominated by operations with small craft from multifunctional platforms, such as boarding operations carried out by fast manned RHIBs or mine hunting with unmanned, subsurface craft. The multifunctional concept of the new platforms requires the ability to operate with a wide range of diverse small craft. Continuing the current practice of using dedicated Launch & Recovery (L&R) systems limits interoperability severely and means that the platform has to be refitted with different systems each time a new craft is taken into service. The alternative – an expensive, space consuming and training intensive option – is to install a wide range of L&R systems.

'LAURA' is a Joint Industry Project in which three types of participants join forces: firstly navies (from the UK, Australia and the Netherlands) provide their requirements, give feedback to concepts and provide full-scale testing opportunities. Secondly, industry partners such as Babcock, BAE Systems, MacTaggart Scott and CMN design concepts and manufacture test hardware and finally, R&D partners (AMC, MARIN) perform model tests, support full-scale tests and develop simulation tools.

Ambitious goal In order to achieve the ambitious goal of the JIP, a phased programme has been set up. During phase 1 a comprehensive and coherent set of requirements covering the navies' needs for L&R systems was developed. This includes being able to operate in sea state 4 to 5, keeping the platform at a moderate speed (below 12 knots) and requiring only a limited platform crew. Concepts for L&R, taken from either literature or brainstormed within the project, range from fishing nets to robotic arms. In this phase logistics were also addressed. These concepts considered using the whole deck width – either aft or more forward – in order to be able to store a craft so it is possible to quickly pick up another craft. It became clear that a focus on automatic connections for side recovery, being able to lift in a seaway and being able to retrieve zero-speed craft are critical issues that needed special attention.

During phase 2 more detailed design, analysis, model and full-scale testing was conducted, and a generic hook design was developed. As a result of the first two phases, three solutions came top on the scoring matrix.

- A cradle system (see figure 1) consisting of a floating cradle that is connected to the ship and used as a capture mechanism for surface vehicles.
- A floating capture device that can be used to make an automatic connection to the painter line of surface vehicles.
- A planar system (figure 2) that uses devices to span a capture line outside of the disturbed water to capture subsurface vehicles, which may be unpowered.

As well as developing the concepts, in phase 3 specific critical issues are also considered. An example is investigating the best way to tow a RHIB alongside a platform, where instabilities can easily occur. Tests using a painter line boom on a RHIB were performed, as well as variations attaching the line to the stag horn or lower attached bridle.

Simulation tool A second important topic in phase 3 is to develop a useful simulation tool, which is able to determine operational boundaries and the limits of particular concepts. It became clear that the first validation data for specific critical parts of the chain of events in a launch or recovery still needed to be gathered. Therefore, special tests were done to evaluate the flow in a seaway around the platform and to characterise the hydrodynamic behaviour of RHIB-like craft. The ultimate aim of phase 3 is to deliver input to a NATO standardisation agreement (STANAG) on launch and recovery, to improve and validate simulation tools and to verify the concepts at model and full-scale testing.

Finally, in addition to the LAURA JIP a more open general discussion platform has been established where launch and recovery issues can be mulled over, ideas exchanged within workshops and new joint industry projects can be started. The next Launch & Recovery Forum will be held in June. For more information see www. larsforum.org

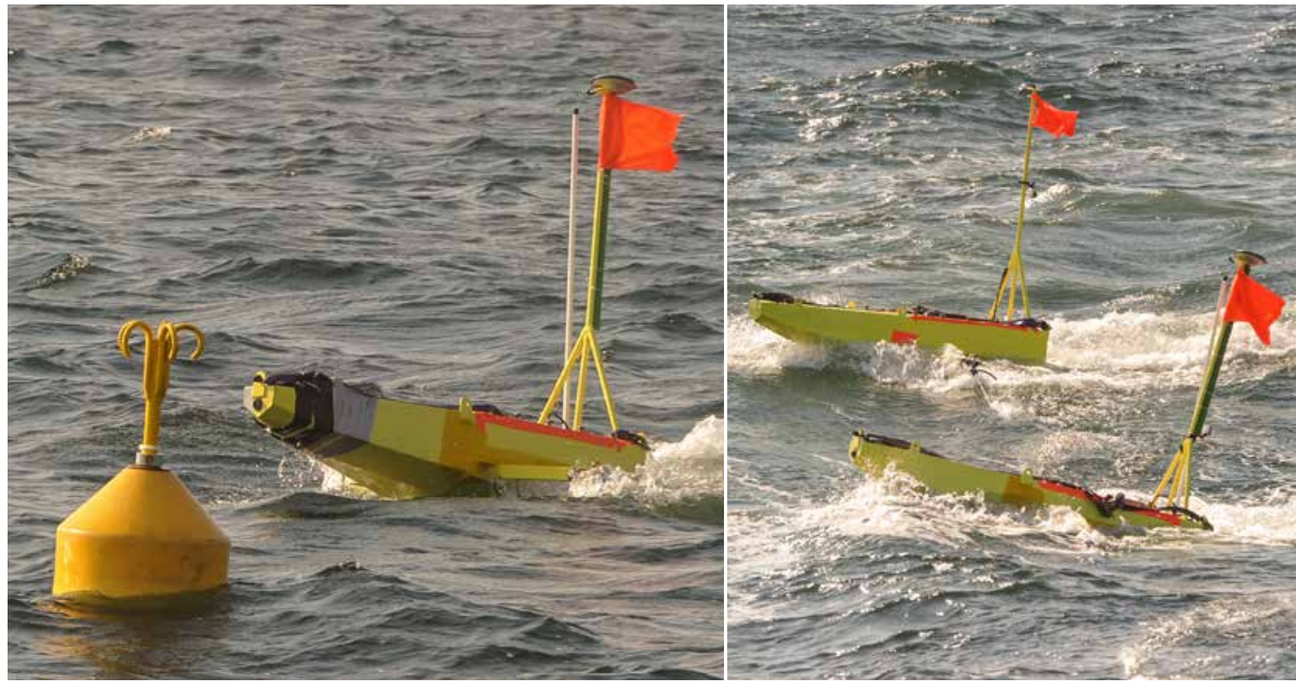

Fig. 2 Planar system as tested at full scale with the foating 'lobster pot' awaiting recovery (left) and the planars (right)