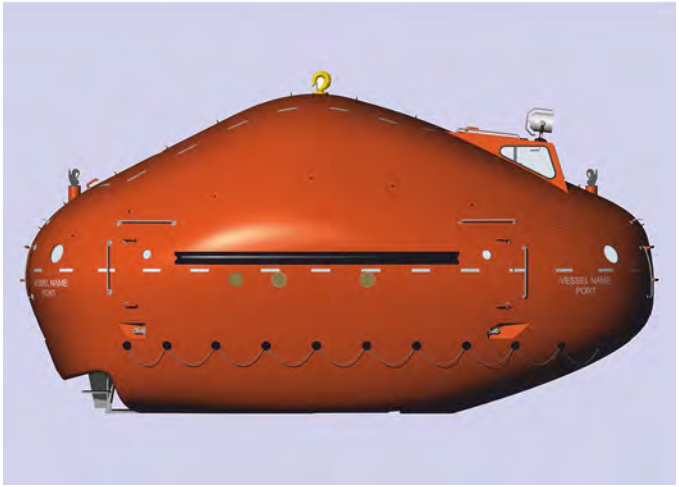
Model testing of Ice Strengthened Lifeboat

Over the past few years, Aker Arctic Canada, in partnership with Robert Allan Ltd., has been working on the design of an Ice Strengthened Lifeboat (ISL) to meet the demands of the offshore industry.

Model testing with ISL in 50cm thick pack ice conditions.

ISL model making forward progress in 15cm Level ice.



Ice strengthened lifeboat (ISL).

The design of ISL addresses the challenges with Escape, Evacuation, and Rescue (EER) in Arctic environments that have been outlined in the Polar Code and other research on lifeboats in cold climates. Heating and insulation, additional space, and endurance have all been addressed by the design. In addition, the ISL has the capability of tolerating dynamic pack ice conditions by using a hull form based on the 19th century Norwegian ship Fram, which prevents it from being crushed by in pressured ice conditions. The propulsion has been recessed into a tunnel, which allows the craft to be launched onto the ice without damaging the propulsion system.

The original design was conceived in 2002 by Robin Browne, and was developed by Robert Allan Ltd. as part of an oil industry joint industry project. Although the original project ended due to the downturn of the US economy in 2008, Aker Arctic Canada helped to revive the project in 2012, thanks to funding from Petroleum Research Newfoundland and Labrador (PRNL).

In 2016, with funding support from PRNL and Research Development Corporation (RDC) the design underwent a series of model testing and numerical analysis work led by Aker Arctic Canada. The purpose of the tests was to demonstrate the capabilities of the ISL in both open water and ice. Self-propulsion model tests were therefore conducted in calm water, waves up to “5” m, and in various pack ice conditions. Computational fluid dynamics (CFD) was used to extrapolate results into wave conditions up to 7.5 m.

“We are still in the process of analysing the data, but initial results are encouraging,” says Mike Neville, Aker Arctic's project manager for the project.

“The ISL's performance in open water exceeds that of traditional TEMPSC (totally enclosed motor propelled survival craft), while having the added ability of being able to transit in pack ice.”

Although the original concept of the ISL was to be capable of being launched in all conditions, and keep the crew safe either on or in the ice until help could arrive, the tests have shown that the ISL also has the ability to transit in a variety of pack ice regimes and even in level ice.

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