

Case Study

Extreme Testing of Personal Flotation Devices for Survival in Polar Waters



White Glacier - Cold water immersion suits



White Glacier

White Glacier has a powerful vision — meet the immersion suit survivability standards and help increase survival rates under the most challenging conditions.

Emergency protective immersion survival suits are required on all sea vessels traveling in waters of polar regions. The suits are worn specifically to remain afloat and survive emergencies on high seas. These suits have traditionally been made of neoprene fabric for floating and for fire protection, and they must cover a person's entire body without exposing any part to the water. The International Convention for the Safety of Life at Sea (SOLAS) regulations state that each person on board a ship must have their own personal immersion suit.

White Glacier, a leading provider of immersion survival suits, designed their next-generation Arctic 10+ (A10+) immersion survival suit to exceed traditional neoprene fabric in buoyancy and thermal protection. Their thermal protective layer provides a much higher CLO value (warmth) than can be obtained by neoprene or other types of materials currently used in these suits. All three suit layers are fire retardant, allowing the subject to escape through flames. The A10+ acts as a life raft in the water and a personal habitat on ice or land, protecting users against the elements for a minimum of five days.

It was essential to certify the A10+ in the three major markets regulated by the U.S. Coast Guard (USCG), Transport Canada and the EU Marine Equipment Directive (MED). After consulting with the USCG and other regulatory bodies to understand the requirements for placing a product on the market, White Glacier began its search for an acceptable certification body to provide testing. White Glacier chose UL Solutions because of its global leadership, convenient locations and the ability to provide support in multiple languages.

The challenges

It would be challenging for White Glacier to displace the traditional neoprene suits if the A10+ was not certified, even with the A10+'s advanced technology for protection from hyperthermia and fire.

Their A10+ was so innovative that their testing and certification process would likely meet some unknown obstacles. White Glacier needed a testing, verification and certification partner that could address obstacles that can typically arise with untested technologies.

Added to White Glacier's challenges was the need to complete certification in time to meet delivery requirements for an order of 600 suits from Ponant for its luxury ships operating in the Arctic and Antarctic. White Glacier needed a certification partner with extensive experience meeting the demanding testing deadlines common in a competitive marketplace.



Person wearing the inmersion survival suit Arctic 10+ (A10+)

"Our first goal was to obtain the certification. Secondly, we were able to improve upon our design based on test results from UL Solutions which were provided during the certification process. Ultimately, our product is better today than when we started the certification process."

*Diego Jacobson,
CEO of White Glacier*

¹ CLO is a value that describes the degree of insulation provided by an article of clothing.



The solution

To reduce time and costs, we were able to simultaneously test, verify and certify the A10+ to the USCG, MED and Transport Canada requirements at our UL Solutions laboratory in North Carolina. With our global reach and in-language support, we partnered with a testing laboratory, ErgoPro, in Trondheim, Norway, for cold water testing.

The results

Our teams consulted with the USCG, Transport Canada and MED officials to obtain all three certifications simultaneously. We successfully tested and evaluated to UL 1197, the Standard for Immersion Suits and 46CFR160.171, for the USCG, the International Lifesaving Code (LSA Code) and CAN/CGSB 65.16, Marine Abandonment Immersion Suit Systems for Transport Canada and the LSA Code for MED. In addition, the A10+ meets the UN International Maritime Organization's (IMO) code for ships operating in polar waters (Polar Code).

Diego Jacobson, CEO of White Glacier, stated, "Our first goal was to obtain the certification. Secondly, we were able to improve upon our design based on test results from UL Solutions which were provided during the certification process. Ultimately, our product is better today than when we started the certification process."

White Glacier was able to meet the Ponant order of 600 A10+ suits in time for a massive search and rescue exercise at the North Pole in the presence of the U.S., Norway, Russia and other notable Arctic experts. The survival suits complied with all Polar Code requirements.

Why UL Solutions?

UL Solutions can empower your product innovations and business growth. Our testing and certification services can help you bring safer, innovative marine life safety products confidently and efficiently to your target markets and maintain compliance in marketplaces where you already have a presence.

We support your need to meet demanding go-to-market deadlines cost-effectively. We can help streamline the testing and certification process by bundling services for multiple requirements in the U.S., Canada and Europe with testing and certification services for CE (PPER), Wheelmark (MED), UKCA (U.K. PPER), U.K. Red Ensign (MSR), UL and C-UL Marks.

As a single-source provider, we can work with you to reduce redundant testing and associated costs, expedite time to market and simplify the process of updating certifications when upgrading your products. Our deep expertise in this area enables our dedicated personal flotation device (PFD) team to deliver unparalleled, knowledge-based customer service. You can trust that we'll work closely with you and your team to inform you of impending regulatory requirements that impact entry into your target markets. We provide a smooth and efficient process for testing and certification to applicable industry standards.

Learn more at ul.com/services/personal-flootation-device-certifications



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