

### **Deadly Delay: Transport Canada Stalls in Improving the Performance of Mandatory Survival Suits**

The misleading standards for the performance of marine abandonment immersion suits ("survival suits") continues to be given little priority by Transport Canada, with the delay being measured in the lives of mariners. The most recent toll came on January 31, 2008 when the tug *Checkmate III* sank off Trinity Bay, Newfoundland, the bodies of her skipper, Larry Parsons, and mate, Christopher Oram, being recovered less than two hours later, their survival suits flooded by the modest two-metre waves.

The *Legal Desk* first addressed the issue of the performance of survival suits in May of 2004: "*Myths of Survival Suits*". In that article we discussed a 2003 Transport Canada study ("*Survival in Cold Water*") where the Department made several startling conclusions, including that as little as two cups of water in a survival suit can reduce its thermal effectiveness by 30%, and a wave height of 0.7 metre can reduce it by a further 15%. The Transport Canada study also highlighted the weakness that current designs of survival suits have in their reliance on a seal around the face to keep water out of the suit, and the importance of testing the suits in realistic sea conditions. Despite these findings Transport Canada has done little to improve the effectiveness of the same standard for survival suits that it currently enforces on mariners.

The *Myths of Survival Suits* article followed on the heels of the sinking of Victoria-based, 22-metre trawler, *Hope Bay*, which rolled over in 2 metre waves spilling its crew of four into Queen Charlotte Sound on February 26, 2004. Two of the crew were wearing Transport Canada approved immersion suits. Both of their bodies were recovered two hours later with their suits flooded. The suits worn in that accident were of the same design as most survival suits used across Canada – neoprene suits that zipped up the front to the chin, with an integral hood that pulled over the head. Water that enters the hood of the suit (such as by exposure to a wave), necessarily leaks into the body.

In the *Myths of Survival Suits* I was critical of the standard set by the Canadian General Standards Board (and accepted by Transport Canada) that provides the watertight integrity of suits is tested by having test-subjects jump from a height of 10 feet into a swimming pool, and then swim for one kilometer on their back. I questioned whether swimming on one's back in a flat swimming pool was an adequate measure of the suit's water tight integrity in realistic sea conditions. I encouraged, at a minimum, the use of a wave pool in testing. In May of 2006, following a Transportation Safety Board report that recommended liferafts be tested in realistic sea conditions, the *Legal Desk* article "*Ships Don't Sink in Swimming Pools*" encouraged the TSB to recommend to Transport Canada that immersion suits also be tested in realistic sea conditions. In September of 2006 the TSB published a report called "*Immersion Suit Issues, Human Performance Report*" which concluded "*the methods for testing immersion suits do not simulate realistic sea weather and sea conditions. All wearers may therefore not be adequately protected from hypothermia and drowning.*"

To their credit, in late 2006, Transport Canada commissioned a study that attempted to validate the accuracy of the current Standard's method of testing how much a survival suit would leak in realistic sea conditions. The study, which was conducted in October of 2006 and circulated on a limited basis in March of 2007, was, in my view, flawed. The report noted that the study was conducted in "calmer conditions" where the face seals were not challenged by waves, and that many "subjects spent a large percentage of the 3-hour immersion with their hands and wrist seals out of the water". Oddly, in averaging the amount of water that entered the suits during the test, the study included a non-approved prototype survival suit (not yet on the market) designed after a commercial diver's drysuit, which sealed, with latex, around the neck rather than the face. This suit reported zero ingress during the testing, and consequently, I suggest, skewed the study's results. Averaging of the ingress for all suit types was reportedly done to protect the individual manufacturers in the event their product did not perform as well as the others. In my view, the study failed in its objective.

While some progress has been made by Transport Canada, it has been too little and too late for the crew of the *Check-Mate III*. In that case the crew had been in the water for 90 minutes when a Department of National Defence Cormorant helicopter arrived and reported as least one of the crew moving in the water. A decision was made to delay the extraction of the crew by 15 minutes so that they could be removed by the Coast Guard vessel *Pearkes*. When the vessel arrived a short time later, both crew had succumb and could not be revived. Their bodies were recovered in survival suits that were reported as being fully zipped up and in good condition, but inundated with water.

While the precise cause of death has yet to be reported, it would be a mistake to simply assume it was due to hypothermia. As Transport Canada noted in their 2003 study, victims are more likely to perish from drowning due to swimming failure before their core body temperatures drops enough for them to die of hypothermia. Swimming failure occurs when water in the suit cools the extremities and weighs them down so that the victim tires and cannot orient themselves to even small waves. The victim will breathe in water, lose consciousness, and drown well before their core body temperature becomes hypothermic.

In a sad twist of irony the JRCC is reported by the CBC as having stated that, had the helicopter crew known the *Check-Mate's* crew's survival suits were leaking, they would have risked lifting the crew rather than waiting for the *Pearkes*. In other words, the rescue technicians assumed the survival suits did not have water in them. What is truly sad about this statement is that the Federal government, or at least Transport Canada, had information available that, if shared, would have lead the reasonable person to the prudent conclusion that, in those conditions, the crew's survival suits did have water in them and consequently, even minutes made the difference. Transport Canada was aware of the dangers of water ingress in typical survival suits since their 2003 study. They had been repeatedly warned by industry representatives such as myself and other fishermen since 2004. In 2006 the Transportation Safety Board cautioned Transport Canada that the testing of survival suits was not realistic and that wearers were not adequately protected.

Unfortunately for the friends and families of the *Check-Mate* crew, these warning were, apparently, not enough. If significant change does not come as a direct result of the *Check-Mate* incident, then perhaps what can be gained from it is the lesson that Transport Canada ought to be more active in sharing its knowledge of the weaknesses of survival suits pending the improvement of the standards for their performance.

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