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*Title: Identifying Fabric and Material Surfaces Designed to Aide Survivors to Self-Board a Raft*

Authors: Woodward CC, McKibbin RW, Teske TD

**Purpose**

The National Institute for Occupational Safety and Health (NIOSH) established the Alaska Pacific Regional Office (APRO) in Anchorage, Alaska. A principal objective of APRO is to gather and analyze fishing fatality and injury data and make recommendations for developing engineered solutions where appropriate. In the years of 2000 through 2006, there were 43 fatalities from commercial fishing vessel loss in waters of California, Oregon, and Washington states. None of the fishermen who died were able to enter a functional raft. Of the 43 fatalities, 12 (28%) died because there was no raft on the vessel, 7 (16%) were trapped in the vessel or had an unknown cause of death. The 24 (56%) other fishermen died due to raft malfunction or when trying to free or enter the raft.

APRO researchers will focus on identifying through laboratory testing, material surfaces that have a greater unidirectional coefficient of friction than bidirectional. It is proposed that such material identified when attached to a raft and immersion suit, would aide a survivor to enter a raft with reduced physical exertion.

**Methodology**

The desired material characteristic will be identified through experimentation, to exhibit more cohesion as a survivor is beginning to enter a raft and release as his body mass reaches a tipping point into the raft. Material swatches with various surface features and construction will be mated in an instrumented test frame. The combination swatches will be subjected to a uniform down-force while a measured lateral force is applied until slippage of the two swatch surfaces occur. The same experiment will be repeated, but with the lateral force in the opposite direction. Materials and surface profiles providing the largest delta in lateral force will become candidates for in-water testing. In-water testing will consist of mounting the test swatches onto a raft and immersion suit using the three combinations of mating surfaces.

**Results**

Laboratory testing and field trials will identify strong candidate surfaces and swatch materials for manufacture into new or retrofit to raft and immersion suit designs.