

DHS Science and Technology Directorate

Development of an Enhanced Performance Rescue Hoist Glove

Working to Develop Better Gloves for Hoist Rescue Personnel

The currently available rescue hoist gloves for first responders have severe limitations. The existing gloves have limited durability and may only last one to two rescues due to the friction from the steel rescue cable degrading the glove material. The glove material can be entangled in the steel rescue cable, causing it to prematurely fail. The current gloves also lack in comfort and flexibility and do not provide enough dexterity for first responders to perform a variety of required tasks.

The goal of this project is to produce an improved rescue hoist glove that is more comfortable, flexible and durable, while providing greater dexterity for the user.

Testing High Performance Materials for an Improved Glove

The Department of Homeland Security Science and Technology Directorate (S&T) is funding Higher Dimension Materials, Inc. (HDM), and the North Carolina State University Textile Protect and Comfort Center (TPACC) to identify, test and select the most appropriate fabric and supporting materials to incorporate into an enhanced glove design.

HDM and TPACC will also examine used rescue hoist gloves to identify the wear patterns from cable friction and limitations of current designs. All of this information will be incorporated into the design of the new gloves.

After the materials and initial design concepts have been selected, they will be provided to two U.S. glove manufacturers for review, comment and input. S&T will fund the creation of prototypes for both laboratory and operational field testing; State and local first responders and U.S. Coast Guard personnel will test the products.



The above two photos show a used rescue hoist glove. The close up shows the intense wear area that causes a glove to fail within a short period of time.

Up to three rounds of field testing are planned, with feedback being received and incorporated into the subsequent rounds of prototyping.

A Better Performing and Cost Effective Glove

Obtaining responder input to determine the rescue hoist glove requirements and incorporating high protective performance materials into the improved glove design will provide multiple benefits to rescue hoist personnel.

The enhanced performance rescue hoist glove will allow users to perform a wider variety of tasks as it will be more flexible with a better overall fit and feel. Current hoist gloves allow for only one task – guiding the rescue cable. Through better design and the use of advanced materials, the enhanced gloves should be able to be used for more detailed work within the helicopter.



Concept drawings for the new rescue hoist glove. The drawing on the left shows the integrated concept and the drawing on the right shows the overglove concept.

The increased durability of the new glove will result in fewer gloves having to be purchased, which will provide an overall cost savings. Also, current users typically place a glove underneath the rescue hoist glove for protection from the heat of the moving cable. By incorporating insulation materials into the glove design, this additional glove expense may be eliminated.

Rapid Development and Commercialization

The program began in April 2018 and is anticipated to conclude in March 2019. HDM's development partners for this effort include North Carolina State, Shelby Specialty Gloves and Carry Gear Solutions. Commercialization of the new rescue hoist gloves is anticipated in 2019.