

Reducing Winch Entanglements With Auxiliary-stop Device

Commercial Fishing Safety Research and Design Program

BACKGROUND

The US Coast Guard approached NIOSH about an increase in the number of winch entanglement injuries being reported among commercial shrimp fishermen in the Gulf of Mexico. In August of 2012, a 15 year-old boy, fishing on a shrimp boat, died when his clothing became caught in an operating deck winch. This fatality received widespread coverage within the industry and further highlighted the need for action.

Using the NIOSH Commercial Fishing Incident Database (CFID), researchers at the Alaska Pacific Office began studying the incidence of shrimp winch entanglements and found a total of 35 severe work-related injuries, including eight fatal injuries, caused by deck winches reported in the Southern shrimp fleet from 2000-2011.¹

NIOSH IS RESEARCHING AUXILIARY-STOP DEVICES TO HELP PREVENT WINCH ENTANGLEMENTS



Try-net winch with no Auxiliary-stop



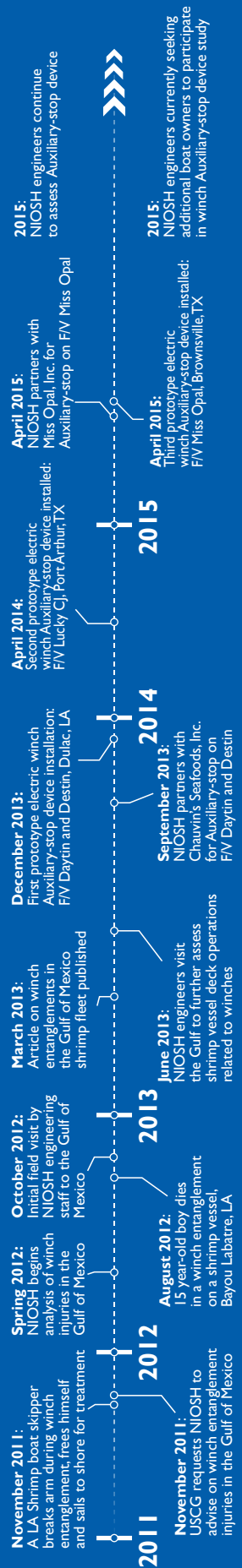
RESEARCH

NIOSH has developed a prototype system that will allow a victim of a try-net winch entanglement to shut off electrical power via a bumper switch. Bumper switches mounted to the winch frame provide an alternate method to turn off the electric winch. The prototype auxiliary-stop circuit is not an emergency-stop device that will arrest the momentum of the drum, but an alternate device to de-energize the winch motor. NIOSH believes that the auxiliary-stop circuit control is a feasible and cost-effective interim safety measure until a more comprehensive retrofit that will immediately stop the drum can be implemented.

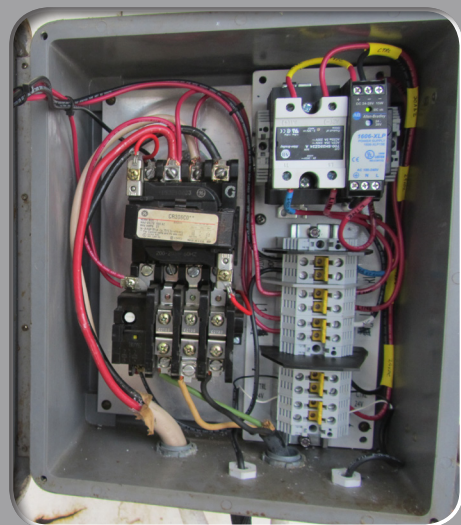
NIOSH formed partnerships with boat owners from various cultural groups to collaborate with the auxiliary-stop testing. Three prototype systems were installed on the F/V Daytin and Destin of Dulac, LA, the F/V Lucky CJ of Port Arthur, TX and the F/V Miss Opal of Brownsville, TX.

THE TEST DATA COLLECTED IS USED TO IMPROVE AUXILIARY-STOP DESIGNS

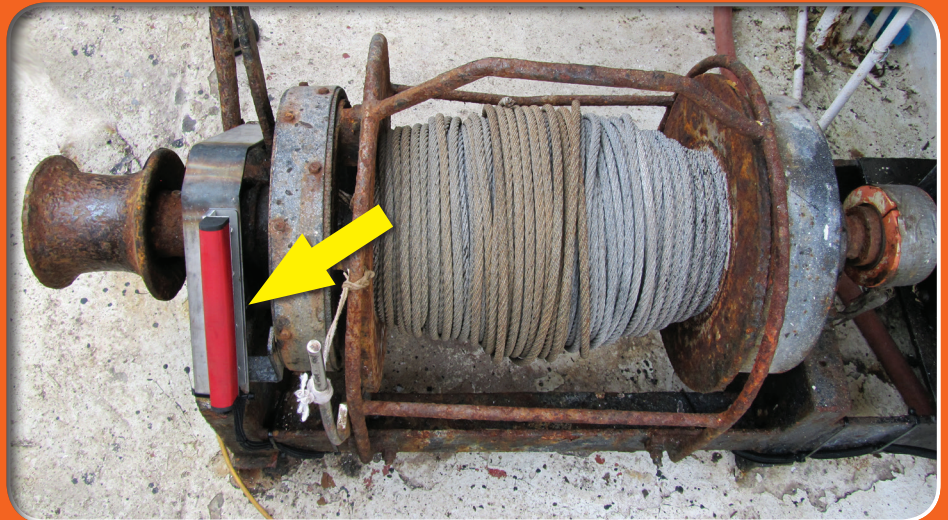
Timeline: Gulf of Mexico Winch Safety Research



AUXILIARY-STOP DESIGN CIRCUIT CONTROL BOX AND SWITCH INSTALLED ON TRY-NET WINCH



A prototype try-net winch Auxiliary-stop system's circuit control box



An Auxiliary-stop switch is located near the cathead

The red switch will terminate power to the winch if activated

ONGOING OUTPUTS

Feedback from the fishermen will be used to refine the prototype design to make it robust enough to reliably withstand the harsh fishing environment. Researchers and industry collaborators will also strive to make the auxiliary-stop circuit compatible with most electrical systems used on side-trawl shrimping vessels fishing in the Gulf of Mexico.

Upon the successful completion of the field-testing, NIOSH will seek partners to promote this system to shrimp fishermen. Through collaborations and partnerships with shrimper associations and safety groups, the successfully tested auxiliary-stop design plans will be made available to shrimpers via various internet websites. NIOSH plans to release the information in English, Spanish, and Vietnamese to better reach the target audience.

Shrimp fishing vessels currently equipped with stationary winch guards or auxiliary-stop devices operating in the Gulf of Mexico, September 2015*



NIOSH IS SEEKING VESSEL OWNERS AS PARTNERS

Mention of any company or product does not constitute endorsement by the National Institute for Occupational Safety and Health (NIOSH).

*Centers for Disease Control and Prevention. Fatal and Nonfatal Injuries Involving Fishing Vessel Winches — Southern Shrimp Fleet, United States, 2000–2011. MMWR 2013;62:157-160.

*You can find more information about other NIOSH engineering interventions by visiting www.cdc.gov/niosh/topics/fishing/engineering or follow us on Twitter @NIOSHfishing

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If you are interested in learning more about NIOSH's work in the Gulf of Mexico, or if you want to become a partner in the research or dissemination efforts, please contact:

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