

IS SAFETY TRAINING IN ALASKA COMMERCIAL FISHING EFFECTIVE?

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ABSTRACT

The Alaska Marine Safety Education Association (AMSEA) has been conducting safety training with commercial fishermen since the mid 1980's. Since 1991, there has been a requirement to conduct emergency drills on documented fishing vessels once each month. The person who conducts these drills must go through a United States Coast Guard approved Drill Instructor course. Through this course AMSEA has trained 5,000 people to conduct drills on vessels. Most of those trained are commercial fishermen. The training emphasizes performance and skills based training and evaluation methodologies.

During this time, the Alaska fleet, which has had the most accessibility to this training, has also experienced the greatest reduction in fatalities of any other region of the nation. This paper will summarize the work of two previous studies on this topic, as well as highlight questions that still need investigation.

STUDY REVIEW BACKGROUND

Commercial fishing presents one of the most challenging environments for safety of any major industry. There are no minimum entry requirements. A person wanting to be a fisherman does not need to prove that he can navigate, maintain a vessel, or even catch fish. No United States Coast Guard (USCG) license or qualifications are required. There are no standards for the crew or operator/owner and no hull or machinery standards. All that is needed to become a commercial fisherman is the financing to buy a boat and a fishing permit and the ability to hire a crew.

The USCG has primary jurisdiction over the safety of the commercial fishing fleet. Historically, most of this involvement has been in search and rescue following a casualty event. In 1985 the USCG started a voluntary fishing vessel initiative. It has only been during the past 20 years or so that efforts have focused on safety in this industry. The Commercial Fishing Industry Vessel Safety Act (CFIVSA) was signed into law in 1988. However, the enforcement of the CFIVSA is often superceded by other duties such as drug interdiction, oil spill responses, and most recently, homeland security. The Occupational Safety and Health Administration (OSHA) also has jurisdiction over fishing vessels, but has typically only been involved with near shore fish processing vessels.

The fishermen's workplace is the sea, with its unpredictability and distance from help. Crews are often multicultural and chosen for their ability to work long, hard, monotonous hours, and not for their nautical experience. Workdays can be 18 hours a day or more with no days off for weeks at a time. The workplace is wet, damp, cold, and noisy, with slippery pitching decks and surfaces. The workplace is surrounded by machinery and tools designed to cut or impale flesh. Environmental conditions can range from arctic cold to tropical heat, even on the same vessel. There is no walking away from a bad day of work on a fishing vessel.

For many years the U.S. Department of Labor (DOL) has rated commercial fishing as the most hazardous occupation in the United States. In October 2003, the occupation of commercial fisherman was rated as the second most hazardous occupation in the country (BLS, 2002). Alaska is the site of some of the healthiest fish stocks in the world, but until recently has also led the nation in fishing fatalities.

The first major legislation regarding fishing vessel safety, CFIVSA, was signed into law in 1988. The CFIVSA dealt mostly with survival aspects once a vessel was lost. It required survival equipment such as liferafts, immersion suits, and emergency radio beacons. It also provided for safety orientation, instruction, and monthly emergency drills on documented fishing vessels (documented fishing vessels are generally more than 30 to 40 feet in length). The required emergency drills include fire, flooding, man overboard, and abandon ship procedures.

CFIVSA also requires that the person who conducts emergency drills be formerly trained in how to conduct these drills. Enforcement of this requirement has been difficult since fishermen are not required to record their drills. However, at least 5,000 people have been trained by AMSEA alone. Other training organizations have also been active, especially in the Pacific Northwest.

Since the enactment of the CFIVSA, the fishing fatality rate has gone down, especially in Alaska. Anecdotal examples of how the training saved lives during an emergency at sea are in evidence. The fact that safety training was widely available in Alaska, and that the fatality rate in Alaska dropped the most dramatically, could lead to the assumption that decreased fatalities in Alaska were due to safety training.

STUDIES LINKING TRAINING TO SURVIVABILITY

The first published study that evaluated the effectiveness of marine safety training and survivability was done by Ron Perkins of the Alaska Native Health Service in 1995 (Perkins, 1995). AMSEA's Drill Instructor course was investigated because it consisted of a set of standardized performance-based skills and also a database of fishermen who had been trained. The study looked at 1,518 people trained by AMSEA between 1991 and 1994. This group represented about 3% of all commercial fishermen in Alaska. USCG investigations, NIOSH files, and news clipping services were used to identify those that had died at sea and those that had survived. This list was compared to the list of AMSEA trained Drill Instructors.

A two by two table (Table 1) was created using the number of fatalities, number of survivors, and whether or not they had been trained by AMSEA. The Fisher exact two-tailed test was used to determine probability that the differences were random.

Results

None of the 114 fatalities in the study time period were AMSEA trained ($P < 0.034$). Of the 343 survivors, 10 were AMSEA trained. Only survivors that were AMSEA trained were counted as “saves” although there was an average of three other crewmembers also saved onboard. It was noted that one person’s knowledge of how to properly use survival equipment and proper emergency procedures, could easily save the entire crew. There were 159 vessel events during the study period. None of the 64 vessels with at least one death, and eight of the 86 vessels with a least one survivor, had an AMSEA trained person onboard ($P < 0.021$).

Table 1: Survivability and AMSEA Training

	Fatality	Survivor
AMSEA Trained	0	10
Not AMSEA trained	114	333

($P = 0.034$)

Expanded Study

Alaska has experienced a 67% decline in fishing fatalities from 1991 to 1999 due to better survival post-incident (NIOSH, 2002). In 2000, Jennifer Lincoln from the NIOSH Alaska Field Station worked on another study to evaluate the effectiveness of AMSEA training using the same methodology. This study was expanded to include data from 1991-1999. By this time AMSEA had trained over 4,000 Drill Instructors (approximately 10% of all Alaskan fishermen). The objective of the follow up study was to investigate whether or not training was still improving chances of survival and to determine the interval at which refresher training should take place. Currently, the Drill Instructor training requirement is a one-time requirement with no refresher training mandated.

Updated Results

There were 66 fatal fishing vessel sinking events in which at least one person died and 168 non-fatal events in which everyone survived. Of the fatal events, 11 had an AMSEA trained person onboard. Of the non-fatal events, 44 had an AMSEA trained person onboard. Training was again found to be effective ($P < 0.05$) in saving lives if the event was within five years of training. After five years no effect could be found. The conclusion could be drawn that training is still effective, but only for a time, and refresher training would be worthwhile.

SUMMARY

Limits

Most of the following limitations were noted by the original study authors.

It is difficult to assess the amount of ongoing training a fisherman may take in either the trained or untrained group. This ongoing training would be hard to document as it may take the form of safety articles in trade journals, safety videotapes, or short safety workshops.

It is also not possible to determine if a trained or untrained fisherman had taken training from another group outside of AMSEA.

Further, it is also not known to what extent self-selection occurred. The AMSEA course is more extensive and in-depth than the minimum Drill Instructor course generally taught. Therefore, more safety conscious fishermen may have taken the AMSEA course. Since the requirements are not enforced, the fisherman who chooses to get training may be very different than the fisherman that chooses not to get training.

Areas for More Research

Although fishermen are required to be trained and to conduct emergency drills, it is widely known that drills are not being conducted on the required basis and it is difficult for the Coast Guard to enforce these drills. The National Marine Fisheries Service (NMFS) trains fishery observers that monitor biological data. In debriefings with these observers after their vessel trips, it was found that only 17% of the vessels they worked on had conducted emergency drills (Cullenberg, 2000). The studies to date have assumed that the Drill Instructor was regularly training the whole crew, who would thus receive the protective effects of the Drill Instructor's initial training. This is not occurring. It would be worthwhile to investigate the survivability of crews that conducted regular emergency drills as opposed to those that do not or are not required to do so, such as undocumented vessels. However, the same problem may arise with self-selection, as those who choose to conduct monthly drills may be different than those who do not.

The effective time interval between training and an event could not be determined other than a five year time frame due to the relatively small number of fishing fatalities and saves. It would be worthwhile to examine a more exact timeline for retention of the various skills acquired in the Drill Instructor course.

In addition, it would be useful to see what other factors may have influenced the 61% decrease in fatalities. Various changes have occurred in fisheries management regimes in the 1990's, which may have influenced safety and reduced or increased the amount of time fishermen actually spent on the water and at risk.

Contributions to the Field

With the exception of some work in Norway and the two studies reviewed within, there have been no studies linking safety training in commercial fishing to survivability. Work in this area should continue, including research into the need and frequency of refresher training.

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