

SURVIVAL SKILLS DECAY IN COMMERCIAL FISHING

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ABSTRACT

Commercial fishing has one of the highest occupational fatality rates in the U.S. and is often a family occupation. In 2005, the U.S. Bureau of Labor Statistics once again found commercial fishing with a fatality rate of 118.4/100,000, nearly 30 times the rate of the average worker. This is despite the fact that the Commercial Fishing Safety Act which was signed into law in 1988, required survival equipment and Drill Conductor training (46 CFR 28.270c).

Documented fishing vessels that fish outside waters, are required to conduct monthly emergency drills. In addition, the person conducting the drill is required to be trained in a Coast Guard approved Drill Conductor course of one to two days duration. The DC course content includes how to use various lifesaving equipment, emergency procedures, and how to conduct an emergency drill onboard a vessel. This includes the skills most likely to be needed in a casualty at sea, such as donning an immersion suit quickly.

It is well documented in CPR and other training that skills decay over time without refresher training. While we feel safe to hypothesize that marine safety skills would also decay over time, in what timeline this would occur in this occupational group has never been studied. Also, since there are requirements for periodic self-training during monthly emergency drills, and these drills are often not being conducted as required, it has been difficult to ascertain what effect this lack of refresher training may have on skill levels.

This is a very timely project. The Coast Guard is working on a Proposed Rulemaking that would consider the frequency of emergency drills and the need for refresher training of Drill Conductors. This proposed rulemaking is the result of Coast Guard enforcement during at sea boardings, which have recognized that emergency drills are often not being performed. The Proposed Rulemaking would likely be out for public comment in the later half of 2007. The results of this project could help establish the needed frequency of emergency drills and refresher training for Drill Conductors.

BACKGROUND AND OBJECTIVES

One objective of this study would be to measure the retention rate of some of the skills required in the federally mandated emergency Drill Conductor (DC) training for commercial fishermen. This would be the quantitative portion of the study. The second objective would seek to note

problems with conducting emergency drills regularly on a monthly basis and to ascertain how often fishermen feel this refresher training should take place. This would be accomplished by interviews conducted with trained Drill Conductors who are vessel owners. This would be the qualitative portion of the study.

The research question is threefold: first, what should the frequency be for emergency drills to be conducted onboard fishing vessels based on skills decay? Second, with what frequency are drills being conducted and what are the obstacles to safety drills not being done? Thirdly, is there a need for refresher training for Drill Conductors due to skills decay and if so what is the most reasonable interval for refresher training?

Almost half of the 6,100 Drill Conductors AMSEA has trained were trained within the first three years of the requirement, which went into effect from 1991-1994. AMSEA's database of Drill Conductors trained demonstrates that only 6% have taken Drill Conductor refresher training. Refresher training is not a requirement. There is also evidence from federal fishery observers that only 29% of the vessels are conducting emergency drills (Cullenberg, 2002)ⁱ. Research has demonstrated that training is an effective intervention in saving lives in a vessel casualtyⁱⁱ but only if the training took place within 5 years of the casualty (Lincoln, 2001)ⁱⁱⁱ.

A comparison of skills retention in two groups, a newly trained, and a previously trained Drill Conductor group would help quantify skills decay and relevant time intervals of training for both drills and refresher training. It would also assist in quantifying the current skills level of Drill Conductors who have taken the training in the past. Follow up research after this initial study could determine the decay of skills in both the newly trained and previously trained Drill Conductors beyond the 9 months of this project.

The comparison of skills retention in these two groups would bring out other useful data. For example, if any of the steps in the skills were missed more often on post-testing, it would point to those areas needing to be taught more effectively in initial training. Or if the previously trained DC group showed a high rate of retention compared to the newly trained group, it would demonstrate the effectiveness of overtraining due to monthly drills being conducted.

In 2005, the U.S. Bureau of Labor Statistics once again found commercial fishing to be the most dangerous occupation in the U.S. with a fatality rate of 118.4/100,000, nearly 30 times the rate of the average worker^{iv}. This is despite the fact that the Commercial Fishing Safety Act which was signed into law in 1988, required survival equipment and Drill Conductor training (46 CFR 28.270c).

Documented fishing vessels (vessels must be federally documented if they admeasure more than 5 net tons) that fish outside waters, are required to conduct monthly emergency drills. In addition, the person conducting the drill is required to be trained in a Coast Guard approved Drill Conductor course of one to two days duration. The DC course content includes how to use various lifesaving equipment, emergency procedures, and how to conduct an emergency drill onboard a vessel. This includes the skills most likely to be needed in a casualty at sea, such as donning an immersion suit quickly. Reports from the Coast Guard^v and National Transportation Safety Board^{vi} have documented that the failure to properly conduct these skills has been implicated in fatalities.

It is well documented in CPR and other training that skills decay over time without refresher training^{vii}. While we feel safe to hypothesize that marine safety skills would also decay over time, in what timeline this would occur in this occupational group has never been studied. Also, since there are requirements for periodic self-training during monthly emergency drills, and these drills are often not being conducted as required, it has been difficult to ascertain what effect this lack of refresher training may have on skill levels.

This is a very timely project. The Coast Guard is working on a Proposed Rulemaking that would consider the frequency of emergency drills and the need for refresher training of Drill Conductors. This proposed rulemaking is the result of Coast Guard enforcement during at sea boardings which have recognized that emergency drills are often not being performed. The Proposed Rulemaking would likely be out for public comment in the later half of 2007. The results of this project could help establish the needed frequency of emergency drills and refresher training for Drill Conductors.

METHODS

The age and gender of the test subjects would mirror those involved in commercial fishing, which is predominately a male dominated workforce with age ranges of 20 to 65.

The study design would involve retesting four of the more measureable skills of the eighteen that are required in the Drill Conductor course to a group of 30 previously trained AMSEA Drill Conductors. AMSEA instructor(s) and post -test proctor(s) would note the decay of skills in the DC trained group and the period of time from their initial training. AMSEA has a database with dates of their initial DC training. This group would then be interviewed in a non-threatening environment about their experience in conducting emergency drills, how often this was done, and other questions to help determine obstacles that may prevent drills from being conducted. Age, education and experience of the respondent would also be noted for any correlations.

Another group of 30 fishermen who had never taken DC training would have these four skills taught to them after being tested for their pre-knowledge and skills. Three post-tests would also take place at one week, one month and three months post initial training, using the same grading criteria as the previously DC trained group. The time interval of one week has been chosen because this is the required frequency of emergency drills on licensed professional commercial vessels such as ferries, cruise ships etc. The time interval of one month has been chosen because that is the time interval between the required monthly drills for commercial fishermen. The time interval of three months has been chosen because that is the length of many seasonal fishing jobs in Alaska, and among the vessels that do conduct drills, many of the smaller vessels just conduct the drill at the beginning of the season and do not repeat the drills on a monthly basis. This group will serve as a more controlled group to look at the decay of skills since they will not have had pre-training or overtraining in the skills before entering this study. The four skills to be tested would be:

1. Give the five critical components of a MAYDAY.
2. Don an immersion suit in 60 seconds following sequential steps.
3. Demonstrate the Heat Escape Lessening Position (HELP).
4. Properly store an immersion suit in bag for quick deployment.

These exercises have been selected since most of them are performance-based skills that will measure retention in both cognitive and psychomotor areas. These skills are also easier to measure since they have step-by-step procedures that can be taught and measured objectively and simply over time.

Post-testing conducted in the untrained group would be conducted by one or two experienced AMSEA instructors who are very familiar with teaching Drill Conductor training courses. The same instructors would do the initial instruction. Testing, post- testing and interviews would be field tested before the start of this group testing to ensure reliability and validity of the test. Instructors would ask the untrained group to perform the four skills to measure pre-training knowledge. The AMSEA instructor would then follow a standard lesson plan for initial training, so all test subjects would receive the same information and skills using the same teaching methodology. The test subjects would have the proper skills explained to them and then demonstrated by the AMSEA instructor. Finally, the test subjects would perform the skill until the instructor was assured that all of the skill steps were completed correctly. The training would aim at getting the test subject to perform as close to 100% as possible, which would be the study baseline for that person. For each step improperly preformed, a percentage would be subtracted from the 100% performance baseline. Thus a skill with 10 steps would score 80% if two critical steps were performed incorrectly.

Test subjects would then be retested in the time intervals mentioned using the same step-by-step skills sheets. The percentage of skill loss would be measured in each post-test described above and documented by the AMSEA instructor. The results of any skills degradation would be graphed as a percentage to note changes in skills over time.

In the initial training, instructors would explain to the subject that there would be no “pass or fail” to their performance. During subsequent periodic testing, there would be no corrective feedback given to the subjects on their performance and subjects would be encouraged not to discuss or practice the skills between testing. There would be no inducement for better performance to make subjects practice. None of the survival skills that would be taught and tested are used in their normal work.

This study is not without some limitations. It cannot be guaranteed that the 30 previously untrained subjects will eventually take all of the post testing. Therefore, more will be recruited. The DC trained group may be reluctant to talk candidly, even in an informal setting, and since subjects will be voluntary they may self-select. Those who volunteer may be more safety conscience about regular drills training. Other studies in skills retention^{viii} have had similar group subject sizes as in this project.

Another limitation would be the inability to accurately ascertain the safety training background of all subjects. It would be difficult to determine how often in the past “untrained” fishermen

acquired a safety skill without formal training. We also would not be able to ascertain in the non-DC trained group, the amount and quality of other sources of safety information or skills that had been acquired from media, other fishermen and publications they view between post-testing. Also, the formally trained DC group would be self-reporting how often they were conducting required monthly drills. They might not be totally forthright in admitting they did not conduct required drills since they could be self-incriminating. They might also feel that this study would lead to more onerous regulations and shape their responses in such a way as to avoid that consequence.

CONCLUSION

Results of this research should be fully completed by the Fall of 2007. At this time the results will be written into the public docket in the Proposed Rulemaking which is due out about the same time. The results of this study will thus have direct input on policy making decisions that the Coast Guard will make regarding the frequency of emergency drills and the interval between refresher training.

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