

PropellerSafety.com

propeller guard information center

To: U.S. Coast Guard, DHS
Reference: Docket No. USCG-2009-0206

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Thank you for the opportunity to comment on this regulatory project. Our comments are numbered and labeled by section of the Advanced Notice of Proposed Rulemaking (**NPRM**).

An index to our comments by Comment Number begins below and continues on the next page.

Comments on Body of the Advanced Notice of Proposed Rule

1. Make EECO (Emergency Engine Cut-Off) switches standard issue.
2. Leave the EECO mandatory use debate to others.
3. Point out an error in the rejection of USCG-2001-10163.
4. Suggest analyzing 2007-2010 BARD data.
5. Suggest inclusion of phrase "Circle of Death"

6. Encourage USCG and boating industry to urge 20 plus states to contribute their data to the public version of BARD.
7. Identify 4 accidents that appear to be EECO preventable accidents that were not listed in USCG's list of EECO preventable accidents.
8. Promote sensor based approaches and use of Technology Prizes to stimulate innovation in this field.
9. Point out possible EECO benefits beyond operator overboard protection.
10. Call for quicker action, provide a timeline showing the issue is over 30 years old.

11. Discuss possible preemption issues and exact waters to which the rule applies.
12. Supply some sources of annual number of boat trips and vessel use data.
13. Identify four accidents involving a possible EECO switch failure.

Comments on the Appendix: Casualties Preventable by the Use of an EECO

14. Thank USCG for including BARD strategy used to identify EECO preventable accidents.
15. Suggest some possible improvements to USCG's BARD search strategy.
16. Point out not all EECO preventable accidents are reported to BARD or properly classified if they are reported.
17. Four years of Florida possible EECO preventable accidents appear to be absent.
18. Note their are property damages in addition to fatalities and injuries.
19. List some quality of life cost to victims.

General Comments

20. Multiple helms.
21. Need to carry a spare key and float aid with some systems.
22. Note 70 USCG crew members were ejected from boats in FY 2001.
23. Identify opportunity to create a "plug and play" kill switch busbar for future and third party use.
24. Point out a Circle of Death invention disclosure we posted in 2010.
25. Mention an invention disclosure we just posted on Radio Frequency Identification (RFID) boat kill switches that can be integrated into life jackets (life jacket becomes a virtual lanyard), into clothing (t-shirt is a virtual lanyard), and into other items.
26. We may make some additional comments later.

Our Appendix

- A1. March 1979 NBSAC Preventable Fatalities Report
- A2. Circle of Death Propeller Accident Invention
- A3. RFID Boat Engine Kill Switch System Invention Disclosure
- A4. RFID Life Jacket Serves as Virtual Lanyard Invention Disclosure
- A5. RFID Clothing Serves as Virtual Lanyard Invention Disclosure
- A6. RID Fob Serves as Virtual Lanyard Invention Disclosure
- A7. RFID Implants Serve as Virtual Lanyard Invention Disclosure

PGIC Comment 1 - Summary - seeks input on making Emergency Engine Cut-Off (EECO) switches standard on new recreational vessels less than 26 feet.

We strongly encourage making EECO switches standard on new recreational vessels less than 26 feet with a means through which boat manufacturers can petition for an exception on certain models if there are obvious reasons for not having one.

Reason - save lives by reducing Circle of Death boat and propeller strikes.

PGIC Comment 2 - Summary - seeks input on requiring the use of EECO switches.

While we encourage everyone to use EECO switches when appropriate, we will leave the debate on mandatory use to others.

Reason - spending the majority of our time focused on other propeller safety issues and developing new, more user friendly alternatives to existing EECO switches.

PGIC Comment 3 - Section III (Background) - reports the second proposed rulemaking that focused on houseboats (USCG-2001-10163) was withdrawn in October 2007 in part due to “the potential cost of installing propeller guards”.

We proved the economic portion of that decision was made in error. Our analysis is thoroughly documented in the 2010 report, “Houseboat Propeller Injury Avoidance Measures Proposed and Withdrawn by the U.S. Coast Guard: An Analysis by the Propeller Guard Information Center” available at:

<http://www.propellersafety.com/wordpress/wp-content/uploads/houseboat-propeller-guards.pdf>

Propeller guards were not required, they were just one of the methods (and the most expensive method) of complying.

Reason - discussions of the USCG-2001-10163 proposal continue to state it was not economically feasible, however we proved it was economically justified based on the data at that time. We are trying to prevent this misinformation from being perpetuated.

PGIC Comment 4 - Section III (Background) - reports USCG analyzed five years of BARD accident data (2002-2006) to identify casualties that may have been prevented if the boat operator had been using an EECO switch.

We suggest repeating the process with 2007 - 2010 BARD data.

Reason - allow more informed decision making and identification of trends.

PGIC Comment 5 - Section III (Background) - describes how a recreational boat continues to circle after the operator is ejected as “will typically continue to operate, usually moving in circles, until it runs out of fuel, runs aground, collides with another object, or is disabled”.

This sequence of events is commonly known as the “Circle of Death”. While the boating industry may not like that phrase, we suggest it be included in the text of any proposed rule.

Reason - so the rule can be found when people are searching for information about preventing Circle of Death accidents. In addition, “Circle of Death” more clearly denotes the nature of the hazard, and the extreme risk of being in the water near a circling unmanned power boat than the phrase “runaway recreational vessel”.

PGIC Comment 6 - Section III (Background) - asks if there are additional accidents that should be included in the list of preventable casualties prepared by USCG.

We had originally intended to closely review USCG’s 2010 Boating Accident Report Database (BARD) for preventable Circle of Death accidents, however, while recently using 2010 BARD for another project, we discovered data from over 20 states and many other areas are missing. With so many states and territories no longer providing their data, the public release version of 2010 BARD is no longer viable for many research tasks. We encourage USCG and the industry to explain to the non-reporting states the value of making their data available to safety professionals.

Reason - encourage USCG and the boating industry to help make BARD boating accident data available so more informed decisions can be made and lives can be saved.

PGIC Comment 7 - Section III (Background) - asks if there are additional accidents that should be included in the list of preventable casualties prepared by USCG.

We quickly reviewed our annual media coverage of propeller accident pages from 2002 to 2006, identified some accidents that might have been prevented if an EECO had been used, then checked to see if they were listed in USCG's list of preventable accidents.

During that exercise we identified four additional accidents that look like candidates for inclusion in the list of preventable accidents based on news media reports. We are not swearing these are EECO switch preventable accidents. We are just reporting they look similar to those on USCG's list of preventable accidents. A portion of a news report or other source for each accident is supplied below:

PGIC Accident 1 - BARD # 2005-MO-0036 May 18, 2005.

"Clearwater Lake: Man Cut by Prop After Being Thrown From Boat". Daily American Republic. May 20, 2005.

"The boat, Nelson said, had a "tiller handle, outboard motor. When they got going, she (Trainer) let go (of the handle).

"On those, you can't because it will cause the motor to kick to one side and the boat to circle. When that happened, it ejected them out of the boat."

Trainer and Tune were completely ejected, while Trainer's daughter, who was wearing a life jacket, was partially ejected, Nelson said.

The girl's feet went into the water, but she "rolled back into the boat and held onto the back seat," Nelson said.

As the boat was circling, Tune swam back to the boat and "kept trying to get into the boat," Nelson explained. "(He) was hit by the prop"

PGIC Accident 2 - BARD # 2005-SC-0026 June 30, 2005

"Boater Injured on Lake Jocassee". WYFF Channel 4. June 30, 2005.

"Department of Natural Resources Lt. Robert McCullough said Huey William Harris, Jr., 62, of Pisgah Forest, was on his 16-foot bass boat about a mile north of the Devil's Fork State Park boat landing just before noon when Harris fell out of the boat.

When he entered the water, Harris was struck on the arm and leg by his boat's outboard motor propeller.

A passerby saw what happened and called for help. Harris was airlifted to Greenville Memorial Hospital, where he is listed in good condition.

McCullough said Harris, who was alone on his boat, was lucky that someone saw him, given the severity of his injuries."

PGIC Accident 3 - BARD # 2006-FL-0198 March 31, 2006

“7-Year-Old Gashed by Boat Propeller”. First Coast News @ 6pm. March 31, 2006.

“Maria said her brother-in-law started to crank the motor.

"As soon as he pulled the string to start it, it just jumped gear and took off. The boat started spinning uncontrollably," Maria said.

She witnessed the boat throw her nephew, 7-year old Chance Bennett out of the boat, his father jumped in after him. Then Maria's son was thrown out, and a toddler was thrown to the floor board.”

PGIC Accident 4 - BARD # 2005-SC-0077 August 6, 2006.

“Lake Greenwood “Heroes” Pull Man From Water”. The Index-Journal (Greenwood South Carolina). August 7, 2005.

“The man, whose identity was not released by press time, had been ejected from his fishing boat by choppy waves fueled by a storm front that moved over the lake in the afternoon, officials said. Several witnesses said they saw a “splash” in the water about 200 yards from Dock C, near the bridge at the Greenwood and Laurens county line.

The boat then began to spin, and the man was “seriously injured” by the propeller, S.C. Department of Natural Resources officer Travis Dudley said.”

Reason - supplying some EECO preventable accidents as requested by the NPRM.

PGIC Comment 8 - Section III (Background) - requests input on issues related to preventing casualties from Circle of Death vessel or propeller strikes.

We continue to promote and encourage the development of virtual propeller guards (sensor based systems that detect people in the propeller danger zones and take appropriate actions).

In addition we encourage USCG and the boating industry to create technology prizes (typically large cash awards) for inventors developing products that meet specific performance, feasibility, reliability, manufacturability, and cost criteria to stimulate innovation in this field. Technology Prizes have proven very effective in other fields facing specific challenges. They have been used for centuries to spur innovation. For a brief review, see Creative Financing. Wall Street Journal. September 27, 2010.

Three areas Technology Prizes could be of use are:

1. Detecting when someone has been ejected (without using a lanyard, key, or a clip on tag).
2. Detecting presence of the operator at the helm (without using a lanyard, key, or a clip on tag).
3. Detecting people near the propeller (without requiring them to be carrying or wearing anything specific).

The boating industry opposes mandatory use of EECOs, and any other mandate that might reduce the number of people boating (and buying their products and services). Their opposition is only natural and should be expected.

A final rule mandating the use of EECOs might be somewhat of a subliminal technology prize. If boaters were required to use EECOs, the boating industry might be willing to spend the funds and effort required to develop and implement innovative, passive EECO solutions that would not require the wearing of a lanyard, clip on tag, or a special key / controller.

Reason - stimulate development of creative, passive systems that boaters will want to have on their vessels.

PGIC Comment 9 - *Section IV(B)* - mentions USCG is considering excluding vessels with starting controls installed inside a wheelhouse, cabin, or other permanent enclosure from any final EECO rule due to the reduced likelihood of their operators being ejected.

Inclusion of an EECO in some of these vessels (like rental houseboats) might encourage novice operators to remain at the controls and be more focused on operating the vessel. We are not saying they should be required in rental houseboats. We are just saying the use of EECOs in some situations may have useful, positive unintended consequences.

Reason - point out possible benefits of EECO use in addition to protection after an operator has been ejected.

PGIC Comment 10 - *Section IV(B)* - discusses phasing in requirements to have EECOs installed in new boats by January 1 of the second year after the effective date of any final rule. For example if the rule was approved in calendar year 2012, the last possible date for boat manufacturers to begin installing them in every new boat subject to the rule going down the assembly line would be January 1, 2014.

The NPRM mentions potentially delaying the effective requirement an additional six months to July 1 of the second year following the effective date of any final rule. The additional delay would be to allow manufacturers, distributors, and dealers time to have compliant products for USCG inspection AND to workout any startup problems.

The NPRM is not talking about retrofit, only about starting to install EECO switches in boats on the assembly line at boat builders not already doing so. NMMA has already said most manufacturers are already installing them. We suggest USCG identify any boat builders not already installing EECO switches. A meeting could be set with those builders at a major boat show. USCG could ask the builders what they thought a reasonable startup time might be after any proposed EECO rule AND USCG could encourage them to start now instead of waiting for any proposed rule.

Reason - waiting two and a half years after this proposed regulation is kicked around a few more years to start will send even more people to their graves before it is implemented in the field. It is time to act.

This matter already goes back MANY years. A few EECO switch timeline events are listed on the next page.

EECO Switch Timeline

1. Early 1950's - various types of kill switches were in use in National Outboard Racing Association boats (per testimony in a legal case).
2. November 29, 1972 - the first commercially available recreational boat kill switch "Quick Kill" patent was applied for by George Horton (per his testimony in a legal case).
3. May 1973 - Valerie Bailey was injured in an alleged EECO preventable accident.
4. January 22, 1974 George Horton was awarded U.S. Patent 3,786,892 for his "Quick Kill" kill switch.
5. 1974 - "Quick Kill" kill switch goes on the market.
6. August 1974 - August 1974 Popular Mechanics article titled, "This Switch Can Save Your Life: Now Required for Racing, and Tournament Fishing. This is Boating's Newest Necessity" touts benefits of Mercury's Quicksilver Ignition Stop Switch.
7. Early 1976 - the question of kill switches as a means of stopping runaway boats was raised as a member item at an NBSAC meeting.
8. 1978/1979 - one of the early legal cases alleging a boat was defective for not having a EECO switch involved a May 1973 accident (Valerie Bailey v. Boatland of Houston).
9. March 1979 - "Presentation of 1975 and 1977 Reported Boating Fatalities Preventable by a Kill Switch" prepared for Spring 1979 NBSAC meeting. This report is very similar to the "Casualties Preventable by the Use of an Engine Cut-Off Switch" document USCG included as part of the current NPRM. **Except the 1979 document was written three decades earlier.** Portions of the March 1979 report are attached to our comments.
10. 1979 - per the National Association of State Boating Law Administrators (NASBLA) 2000 annual report, Bill Garner was responsible for the implementation of kill switch requirements on certain boats in Alabama in 1979 that resulted in fewer fall overboard deaths. Mr. Garner received NASBLA's Lifetime Achievement Award in 2000 for his efforts on the kill switch and other projects in his boating safety career.
11. November 1-4, 2003 - NBSAC passed a resolution asking NASBLA to create a Model Act for the enforcement of the wear of EECOs on boats equipped with them. The Model Act is to parallel the PWC lanyard requirement.
12. April 1-4, 2006 - NBSAC passed Resolution Number 2006-77-03 that led to the current NPRM.

PGIC Comment 11 - Section IV C. Preemption - states that any final rule would preempt State laws on waters subject to U.S. jurisdiction and create a national standard. It goes on to claim States cannot continue to enforce any existing laws in conflict with it or establish any new ones because this one will preempt theirs.

As we understand it, any final rule would be only applicable to “waters subject to the jurisdiction of the United States”. Each state wishing to apply the final rule to their waters would have to pass their own similar rule. Although USCG has “some” legal basis for preempting states from establishing their own different EECO rules, the soundness of that basis has yet to be tested. If that is all true, the language needs to be a bit more obvious in any final rule.

A preemption clash appears possible between states that have already legislated mandatory use of EECOs and a final USCG rule that leaves use of EECOs as a voluntary decision.

Personal watercraft (PWC) might also have a preemption clash with the States. In Section IV USCG says they do not distinguish between PWCs and boats. However, some states allow PWCs the option of using an EECO of a self-circling device (PWC goes slowly in a circle when operator falls off). Those states would appear to be in conflict with any final rule that required EECO switches.

Reason - any proposed final rule would need to be clear on preemption, on the waters to which it applies, and as to any state rules that might need to be passed for it to be in effect on other waters. Also to point out possible preemption clashes between state and federal EECO switch laws.

PGIC Comment 12 - Section V (Information Requested) #8 - requests information on the annual number of trips for recreational vessels or recreational vessel use rates by vessel types in addition to the Outdoor Foundation / Recreational Boating and Fishing Foundation data.

Below are some sources for data of this nature:

1. 2002 National Recreational Boat Survey Technical Report. November 30, 2003. Strategic Research Group (SRG). Prepared for USCG. A bit dated, but has mean boating days by boat type (frequency stops at 5 or more days) and average number of hours per day by boat type as percentiles by answers.
2. Many regional economic impact of boating studies collect boating frequency information. For example: Predicting Marine Slip Renter Trip Spending at US Army Corps of Engineering Lakes. May Kathleen Perales. Dissertation. Michigan State University. Park, Recreation and Tourism Resources. 2010. The National Marine Manufacturers Association (NMMA) has a relationship with the Recreational Marine Research Center (RMRC) at Michigan State University where many of these studies have been performed. RMRC can probably supply several of them.
3. Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling. United States Environmental Protection Agency (EPA). Report No. NR-005d. July 2010. Pages 6 & 10. This report includes annual usage data by horsepower for outboards, stern drives, and inboards. It is used to help drive EPA's Nonroad Model.
4. EPA Report to Congress: Study of Discharges Incidental to Normal Operation of Commercial Fishing Vessels and other Non-Recreational Vessels Less Than 79 Feet. EPA 833-R-10-005. August 2010. Final Report. This report does a nice job of characterizing non-recreational vessels less than 79 feet.

Reason- supplying possible sources of information USCG requested.

PGIC Comment 13 - Section V (Information Requested) # 22 - Risk of EECO switch failure asks if there are any injuries or fatalities associated with EECO device failures.

Four accidents claiming EECO failures come to mind:

1. The well known October 28, 2000 Yamaha/Skeeter - Davis accident that resulted in a \$6 million settlement.
2. January 12, 2002 accident in which one of USCG's 24 foot Boston Whaler patrol boats struck a small passenger vessel with about 50 people onboard near Miami Florida. The accident is thoroughly documented in a NTSB accident report.
3. January 2006 BSAC reported diving accident in the U.K.
4. August 13, 2011 Boston accident involving a 12 year old girl by the last name of Williams in a dinghy with her father.

Portions of a news report or other source for each accident involving a possible failure of an EECO are below:

1. "Boat Accident Lawsuit". Alexandria Daily Town Talk. September 6, 2003.

"Roy said William Self was piloting the boat, which was paired with a 200-horsepower Yamaha engine, when the shallow boat made the auto-generated turn. Although Self had the ignition lanyard attached to his right wrist, Roy said, Self was thrown all the way to the left side of the boat during the sudden turn, and the lanyard was still too long to activate the boat's kill switch.

The boat's propeller struck Davis, mangling his left arm, striking his head and neck, and causing total paralysis."

2. "Collision Between the U.S. Coast Guard Patrol Boat CG242513 and the U.S. Small Passenger Vessel Bayside Blaster, Biscayne Bay, Florida, January 12, 2002". National Transportation Safety Board (NTSB). NTSB/MAR-02/05. PB2002-916405. Pages 41, 42.

"If the kill switch lanyard and clips had operated properly, the engines of the Coast Guard patrol boat would have shut down as soon as the coxswain was ejected from the boat. And if the Coast Guard patrol boat engines had stopped when the coxswain was ejected, the boat would not have struck the Bayside Blaster the second time. Further, the other property damage resulting from the accident would not have occurred, and the Coast Guard crewmembers would not have been placed in jeopardy of being run over by their own vessel. According to the coxswain, he was struck by the boat but sustained only minor bruising. If the runaway vessel's hull had struck him at a different angle or if the propellers had struck him, he could have been seriously injured or killed."

"The kill switch lanyard and connections were examined at the Safety Board's Materials Library. The features of the belt clip fracture face were consistent with bending overload, and indicate the belt clip was the weak link in the lanyard assembly. In a kill switch system, the weakest link should be the force required to operate the switch. Either the belt clip was the wrong attachment, or the lanyard may have been wrapped around some other item on the console, thereby transferring all the force to the belt clip and not the kill switch."

3. British Sub-Aqua Club (BSAC). Captured from their web site a few years ago.

January 2006 06/063 (accident number)

“Two RHIBs were returning from a dive site in rough conditions. During the trip one of the outboard engine mountings broke. The cox stopped the boat and signalled for assistance from the other boat. They decided to tighten the remaining bolt and to continue. Shortly afterward in rough waves the engine swung up clear of the water, twisted and fell back. It was now facing in another direction and this caused the boat to turn very quickly. The cox fell from the boat and the kill switch, although attached to him, did not work. The boat ran over the cox at high speed and his right leg was hit by the propeller. His midriff area was then dragged into the propeller, with his drysuit tangled in it. The engine stalled. The other person in the boat tried to lift the engine but could not because the cox was attached to it, underwater. The cox struggled to get to the stern of the boat to breathe. His suit became untangled and he was able to escape and get back in the boat. His only injury was some bruising. His drysuit and undersuit were shredded in the stomach area.”

4. Girl Thrown From Boat Saved by Dad's Quick Thinking. WHDH 7News Boston Massachusetts. August 15, 2011. Accident date was August 13, 2011.

““The boat did cut her life jacket and took some of her shirt off her back, but the father got cut up pretty good in the head, lacerations in the head and also lacerations of the left forearm and the hand,” Milone said.

The harbormaster said a safety lanyard, attached to both the girl's life vest and the kill switch on the engine, broke off from her and that's why the boat went out of control.

"She did the right thing, safety-wise, but the lanyard parted from the wrong end of the lanyard, it should've parted from the engine, not her life jacket -- but again, she did the right thing," Milone said. "A very safety-conscious young lady."

In addition, we have heard some youth have trouble rope starting some outboards with traditional lanyards attached (lanyard too short for them to get into a position from which they can pull hard enough to start the engine).

Reason - supplying information on possible EECO switch failures requested by the NPRM.

Comments on Appendix: Casualties Preventable by the Use of an EECO

PGIC Comment 14 - Details of BARD Search Strategy

We are very grateful to USCG for including the BARD search strategy they used to identify EECO preventable accidents. They described the process used to determine if the identified accidents were preventable using EECO switches, and included the list of accidents that were deemed preventable. Including these materials makes it much easier for others to replicate their work. Thank you USCG.

Reason - express thanks.

PGIC Comment 15 - Details of BARD Search Strategy

We noticed USCG's search strategy included three keywords in the Accident Description (circl*, runaway*, and eject* where * is a wildcard for any ending of the word). After having read hundreds of Accident Descriptions we have noticed: (1) words are often misspelled, (2) some word may be split or not split such as runaway / run away or overboard / over board, (3) words you may not think of at first are often used. For example we suspect they might also use overboard, fell, wake, wave, swell, knocked, thrown, threw, bounced, collision, collided, hit, spin, spinning, lanyard, kill switch, kill-switch to describe some of the details that might relate to an operator overboard situation.

Reason - incorporating the BARD search word suggestions above may result in identification of additional EECO preventable accidents.

PGIC Comment 16 - Lists of Preventable Accidents.

The list of accidents including EECO preventable fatalities and preventable injuries includes no mention of accidents not reported to BARD that also involve EECO preventable fatalities or injuries. While estimating their number may be challenging, we feel they should at least be mentioned. It also includes no mention of EECO preventable fatalities or injuries that may be in BARD but were not recognized as such due to lack of information (like the ones we found earlier).

Reason - increase awareness that some EECO preventable accidents are not reported in BARD or are in BARD but were not identified as EECO preventable accidents.

PGIC Comment 17 - Lists of Preventable Accidents.

Florida is a major boating state and while the report includes BARD reported accidents from 2002 to 2006, we only noticed Florida accidents from the year 2006. Are the 2002 to 2005 Florida accidents some of those not marked by state, or were they excluded?

Reason - point out four years of Florida accidents may be missing from the list of preventable fatalities and injuries and from the total counts of injuries and fatalities. This could be very significant because Florida is a major boating state, and as such accounts for a larger fraction of the total number of boating accidents than many other states.

PGIC Comment 18 - Lists of Preventable Accidents.

The list of accidents including EECO switch preventable fatalities and injuries is confined to human injuries and fatalities. It does not include boat or property damages from boats underway in which the operator stepped away from the controls or was ejected.

Reason - noting there are property damages in addition to fatalities and injuries.

PGIC Comment 19 - Lists of Preventable Accidents

The list of accidents including EECO switch preventable fatalities and injuries is confined to human injuries and fatalities. No effort is made to quantify the impact of these accidents on the:

1. Daily lives of those severely injured.
2. Those who long for their loved ones no longer with us.
3. Lifetime medical costs of those injured.
4. Lives of friends and family members.

Follow up news reports of major propeller injuries often talk of local fund raising efforts to pay tremendous medical costs and especially to purchase prosthetics for younger amputees who will go through several as they grow. Insurance plans are often very limited in their coverage of prosthetics. Two references on prosthetic costs are below:

“Cost of Prosthetics Stirs Debate”. Boston.com. July 5, 2005.

Jordan Thomas Foundation (himself a propeller victim) <http://jtf.ndandp.com>

Reason - call attention to long term financial and human costs of “struck by boat” and “struck by propeller” accidents.

General Comments

PGIC Comment 20 - vessels with multiple engines may require dual EECO switches AND vessels with multiple helms may require EECO switches at each helm.

Reason - pointing out the types of and numbers of EECO switches involved.

PGIC Comment 21 - A November 2006 Boat U.S. article titled "Keeping Current on Kill-Switches: Foundation Findings Number 42" tests several lanyard and wireless kill switches. It notes the need to keep an extra key onboard for restarting AND to put a float on your lanyard so you can retrieve it if it goes into the water.

Reason - point out the need for an onboard spare lanyard key for quick restarting after activation, and a float to aid in retrieving lanyards that may be in the water.

PGIC Comment 22 - A lot of Coast Guard crew members are being ejected from boats.

Page 42 of the NTSB report on the U.S. Coast Guard boat involved in an accident cited earlier,

"Collision Between the U.S. Coast Guard Patrol Boat CG242513 and the U.S. Small Passenger Vessel Bayside Blaster, Biscayne Bay, Florida, January 12, 2002". National Transportation Safety Board (NTSB). NTSB/MAR-02/05. PB2002-916405.

relates "Given that more than 70 Coast Guard crewmembers were ejected from nonstandard boats in FY 2001, ejection is a hazard in the operation of such boats" AND cites a Coast Guard headquarters' ALCOAST message dated January 30, 2002 as the source of that data. Those numbers may surprise some readers and more current data on USCG ejections may be of interest to others as well.

Reason - call attention to the number of USCG crew members ejected in FY 2001.

PGIC Comment 23 - as boats and their applications become more diverse, our abilities to monitor and detect dangerous situations are improving. It seems like it would already be helpful if boats had an automatic engine kill system that could be accessed by multiple systems. Boats could be manufactured with a kill switch system that had a busbar with attachment points somewhat similar to USB ports. Later improvements or 3rd party devices could access the kill switch via a signal delivered to one of the busbar plugins to kill the engine. This would allow later OEM improvements, options, or 3rd party devices to be more economical, less intrusively installed, and more reliable. They would only need to generate a signal and supply it to the busbar instead of switching the high powered lines themselves.

Reason - point out "plug & play" design opportunity.

PGIC Comment 24 - just like life jacket / PFD wear rates, EECO switch (lanyard) use rates are low. Boaters do not like being saddled with invasive safety devices, rules and regulations. An opportunity exists to create passive devices specifically addressing the Circle of Death problem as we did at "Circle of Death Propeller Accident Invention" <http://www.propellersafety.com/circle-of-death-boat-propeller/> (a copy is attached). Our invention is in the public domain, anybody is able to use it or improve upon it (as long as they do not infringe on any existing patents by others).

Reason - make others aware of opportunities to create new products specifically targeting Circle of Death boating accidents.

PGIC Comment 25 - USCG is trying to improve wear rates of life jackets and frequency wearing lanyards or other devices for use of EECO switches. We quite recently posted a series of invention disclosures showing how Radio Frequency Identification (RFID) technologies could be incorporated into EECO switches. Washable UHF RFID tags can be an integral part of a life jacket allowing the life jacket / Personal Floatation Device (PFD) to serve as a virtual lanyard. These invention disclosures allow two important safety functions (floatation and boat kill switches) to be incorporated into one. For example, an inflatable life jacket could also serve as a virtual lanyard.

Our same series of invention disclosures also shows how RFID kill switch technologies can be integrated into clothing (such as t-shirts, shorts, etc.), turning a piece of clothing into a virtual lanyard, or applied in other ways.

These invention disclosures are in the Appendix to this document, and can also be viewed online at:

<http://www.propellersafety.com/2782/propeller-safety-inventions/rfid-boat-kill-switch-inventions/>

Reason - make others aware of opportunities to create more user friendly EECO switches, one of which is integrated into a life jacket.

PGIC Comment 26 - we may make additional comments later in response to comments from others. We decided to go ahead and post these now to encourage others to respond as well.

Gary Polson

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An Appendix follows

Appendix 1

March 1979

NBSAC Preventable Fatalities Report

If you wish to view the document in Appendix 1, you can see it on the copy posted in the USCG Docket on regulations.gov

Our comments are posted there as document # USCG-2009-0206-0076

Appendix 2

Circle of Death Propeller Accident Invention
Placed in Public Domain by

Propeller Guard Information Center

our actual submission contained a copy of our post at:

<http://www.propellersafety.com/circle-of-death-boat-propeller/>

Appendix 3 through Appendix 6

RFID Boat Engine Kill Switch
Invention Disclosures

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Our actual submission contained copies of the five RFID invention disclosures linked from our August 29, 2011 RFID invention disclosure summary page at:

<http://www.propellersafety.com/2782/propeller-safety-inventions/rfid-boat-kill-switch-inventions/>

or just go to PropellerSafety.com and look for them under the tab marked "Our Inventions".