

Residential Dock Electrical Safety Sub-Workgroup
November 25, 2019
Varina Library- 1875 New Market Road, Henrico VA 23231

Attendees:

Haywood Kines	I.A.E.I
Allen Turner	I.A.E.I
Neil Harrington	SML Marine Fire Rescue
David Trimble	SML Citizens ESD subgroup
John Broughton	VBCOA- Franklin County
Florin Moldovan	VBCOA- Spotsylvania County
Robby Dawson	NFPA
John Lane	Stakeholder
Jim Erler	Stakeholder-Bedford County
Guy Tomberlin	VL
Gordon Frost (phone & Adobe)	NFPA
Bryan Holland (phone & Adobe)	NEMA
Doug Dorr (Adobe)	Electric Power Institute
Frederick Reyes (Adobe)	
Gary Loftis (Adobe)	
Randy Holloway (Adobe)	Smith Mountain Lake
Kevin Arnold (phone)	EATON
Jimmy Moss	VBCOA- Grayson County
Kathy Byron (Adobe)	
Ronald Jefferson (Adobe)	APCO
Cindy Davis	DHCD
Jeff Brown	DHCD
Richard Potts	DHCD
Thomas King	DHCD
Nicole Donaldson	DHCD

Welcome/Introductions

The meeting began with those present providing positions and concerns related to the proposal.

Mr. Kines disagreed with Mr. Erler's proposal and questioned if he looked at the National guidelines for the operational marina requirements for compliance with the National code, electrical shock drowning association documentation (provided references about poor maintenance/equipment on boats and power to the shore and installation instructions). Mr.

Kines felt this proposal is very dangerous and deadly. He is in opposition to the proposal as written.

Mr. Turner agreed with Mr. Kines and added that eliminating one of the most critical components of the electrical system is dangerous. This proposal will go into direct conflict of the grounding principles of the shore grounding book of the National Electrical Code NFPA 303 which recommends ground integrity test. He indicated that there are nine marinas (as of 2014) that have ongoing around the clock ground system that detect ground faults.

Mr. Harrington wanted stray voltage stopped and wanted to prevent electrical shock drowning. The residential dock is still grounded and if we break bonding at the sub panel at the dock and the service panel at the house this would be a solution that he has been requesting for a year.

Mr. Broughton and colleagues had concerns but has an open mind.

Mr. Moss wanted to sort out the change and end up with a proposal that makes the docks safe.

Mr. Dawson and Mr. Tomberlin wanted to observe and see what resources NFPA and UL may have available.

Mr. Holland wanted to address the violation of the provisions with the National Electric Code and all the assumptions with the proposal that are not addressed. He pointed out that when we are modifying the later chapters of the NEC it is intended to supplement the mandatory requirements of Chapter 1-4. Article 250 "grounding and bonding" already mandates certain requirements for grounding and bonding. When we get to chapter 5 the rule is an enhancement safety to article 250 and to put this mandatory exception in it violates 110.10 /250.485, and violates all of part 6 of article 250. The exceptions now is assuming there is a feeder because were doing an exception to the main rule in 555.15 which is addressing feeders that supplied by a service out to a residential docking location. This proposal doesn't address the circuits at residential locations and it assumes that there's going to be a remote panel board and a grounded electrical system at the remote panel board. There is no requirement in the code for that. This proposal is putting a mandatory requirement on single family dwelling. It's taking a stray voltage problem from the utility and trying to institute a rule into the NEC.

Mr. Holloway pointed out that the electrical safety grounds are not being removed. There are ground rods at the docks. What's being disconnected is the ground at the service panel at the house.

Mr. Frost agreed with Mr. Holland and added that the tripping of the GFCI circuit is not a safe situation.

Mr. Dorr pointed out that if we continue to use the green wires all the way down to the dock or marina then that doesn't eliminate the drownings but if we get rid of it then there is a challenge of decreasing the redundancy for safety. This is also not just a utility problem. The proposal needs to be more explicit about the requirements for ground circuit interrupters on the

upstream as well as what's going to be required at the dock. He does not feel comfortable with removing the green wire without those other caveats. He will send the link (300-201-7129-in search field).

PROPOSAL:

Mr. Erler and Mr. Harrington came up with proposal. Mr. Erler went through a PowerPoint to address his research in obtaining the proposal. His main concern is safety and his problem with NFPA 70, article 555. If the electrical system is up to code then there is electricity in the water. The residential docks are fundamentally different than marinas.

Mr. Harrington pointed out that if they cut off main circuit breaker in the house and voltage is still in water then this needs to be fixed, that everyone can at least agree on that.

Mr. Erler recommended a hybrid system (this is done in Europe) and explained the differences.

Mr. Holland questioned if the earthing system carries faulty current, it doesn't work in reverse. The problem is open neutral. No matter what, if a path exists, the current will follow any path available to get to the water and the metal parts of the dock or metal equipment at the dock.

Mr. Erler responded that the neutral is not connected.

Mr. Kines questioned how the over current at the house trips.

Mr. Erler responded that it trips GFCI, which Mr. Kines pointed out is not a requirement of the 2014 NEC. Mr. Erler admitted he would need to change his proposal so that to remove the service ground to the dock, you would have to install GFCI in sequence even though its not a current requirement.

Mr. Dorr suggested bringing lower voltage out there instead of removing green wire and suggested that there are 5 approaches to eliminate shock and not have people drown.

Mr. Holland pointed out that it is flawed trying to manipulate TT side from TN-C-S side.

Ms. Davis questioned if the power companies are involved in the conversation.

Mr. Erler responded yes, Southside Appalachian Co-op is the utility. Dominion doesn't provide any service to the lake and that the power company is aware of the battle over faulty current and the conflicts between the requirements of the NFPA and the existing problem of loose current in the lake. Their view is that this is just part of the way it's done and that everything that's on the other side of the meter base isn't the power company's problem.

Mr. Kines pointed out that the current code does not require any GFP protection. The 2017 goes to 30mamp on the feeder and addresses shore power at 100. It still requires GFCI at all 15-20amp 120v receptacles.

Mr. Holland explained that he whole-heartedly supports use of GFCI in the code and expanding that protection where able, but he is wholly against removing the equipment grounding conductor and relying solely on GFCI which is not the manner it's intended to be used. He suggested to completely withdraw proposal submitted, revise the proposal to take in Article 553 & 555 from the 2020 code making process. Further, he recommends submitting a proposal to the 2023 NEC code making panel. The 2017 NEC requirements for 555 are enough, although it will not address the stray voltage problem.

Ms. Davis suggested that we look at the other countries to see what they have put into place to address the issue as the proponents have indicated. She asked if article 303 does not address residential docks. Mr. Holland confirmed that it is not for residential docks and that he believes adhering to the most recent codes approved by stakeholders and vetted through the code making process is the best course of action.

Mr. Kines said the 2020 555 section of the NEC includes residential buildings, townhomes, etc and that's probably why he brought it up. Ms. Davis asked what changed in the 2020.

Mr. Kines said no matter what you do the stray voltage from the utility will be there.

Mr. Jefferson responded that the power company's position is to recommend adherence to National Electrical Safety Code. He will continue to have conversations with others. He admitted this has been an issue for a while, but he doesn't have any specifics.

Mr. Loftis questioned if the grounding system to the docking facility (ie ground wire neutral connection) is sinking or sourcing

Mr. Holland responded that there is no known solution to stray voltage anywhere. The NEC is not the proper place to address the matter, especially if the suggested solution reduces the minimum requirement of the code approved by an ANSI consensus process

Mr. Kines pointed out that we need testing data from here including the tripping then we can talk about this. He pointed out that we should test with our voltage in America and not in Europe. Mr. Erler also asked for measurements to be conducted on the grounding issue since both sides seem to be making claims without evidence of what's actually happening with code compliant docks.

Ms. Davis suggested creating a list of next steps: what needs testing, reaching out to the 2023 code making process and contacting other country's using different systems to see what they have in place and how it may differ from the electrical structures in place in the U.S.

Mr. Holland pointed out that we can't change the utility system here in the US with the VA Building Code.

Mr. Trimble pointed out that we have one proposal we need to work on that and will work with VA Tech to do the testing but it could take several months.

Mr. Kines suggested substituting 555 only from the 2021 NEC.

CLOSING

Proposals closes Sept, 10 2020 (can submit proposal online) for the 2023 NEC

We will supply the link to do the code proposal process through NFPA/NEC.

Research on International Electrical Code and other countries successes with residential docks.

Research power companies if there is anything that should or would be done to remove stray voltage.

Mr. Holland will provide information on GFCI relatability based on current standards.

Next meeting will go out with Doodle Poll January 28- 30, 2019.

RESIDENTIAL DOCK MEETING
1875 New Market Road, Henrico VA 23231
November 25, 2019
SIGN IN SHEET

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