Risk Assessment
Safety Plan

Project information:

Portable Hydroelectric Generator	03/01/2018
Name of Project	Date of submission

Team Member	Phone Number	e-mail
Taylor Davis	(305) 481-1243	Tjd12@my.fsu.edu
Jackson Burns	(303) 974-0219	Jkb14@my.fsu.edu
Lawson Nunley	(407) 902-9123	Lan13@my.fsu.edu
Colin Ogilvie	(727) 204-5450	Cmo15d@my.fsu.edu

Faculty mentor	Phone Number	e-mail
Dr. Jerris Hooker	(850) 410-6463	Hooker@eng.famu.fsu.edu

I. Project description:

Our project is a portable hydroelectric generator. The project itself consists of two separate approaches, both utilizing the same electrical circuit. The first approach is a buoy-like helical turbine, and the second is an undershot waterwheel design. Both versions will be tethered in place and float on the body of water to which they are deployed. Power generated will be transmitted to a land connection that will feature both 3-prong and USB inputs.

II. Describe the steps for your project:

Our project must first be deployed into a body of water and then tethered to a static structure to prevent undesirable movement. An extension cable connecting to the generator will then be connected to the DC-to-AC converter on land. Once the converter has been connected, the generator will be ready to supply power to electrical devices.

III. Given that many accidents result from an unexpected reaction or event, go back through the steps of the project and imagine what could go wrong to make what seems to be a safe and well-regulated process turn into one that could result in an accident. (See examples)

The primary concern with this project relates to accidental electrocution. If the generator or its output is exposed to water during operation, there is a significant risk to human life. Another concern is from impact injuries. If the device falls on someone, it may cause injury.

IV. Perform online research to identify any accidents that have occurred using your materials, equipment or process. State how you could avoid having this hazardous situation arise in your project.

With respect to a portable hydroelectric generator device, there are no known accidents I was able to discover during my research. Since so few devices like ours exists, especially on our projected scale, there is not a huge device population. The most significant way suggested to avoiding electrocution on water is to avoid exposure prior to electrically testing it. We plan to employ consideration by means of avoiding water exposure during deployment by utilizing a boat or avoiding contact during deployment other means.

V. For each identified hazard or "what if" situation noted above, describe one or more measures that will be taken to mitigate the hazard. (See examples of engineering controls, administrative controls, special work practices and PPE).

Safeguarding against accidental electrocution will involve confirming the interior generator housing is completely waterproof and locking or decoupling the turbine to prevent unwanted generator activation. We will protect ourselves from unwanted impact injuries by utilizing a dolly while transporting the device on land.

VI. Rewrite the project steps to include all safety measures taken for each step or combination of steps. Be specific (don't just state "be careful").

Determine how we plan to tether the device and secure those connections. Utilize dolly or other transportation device to move generator to deployment location. Disconnect or lock turbine. Transfer generator to boat or deploy to location if a boat is not necessary to avoid water exposure. Reconnect turbine, but keep it locked until we are ready to activate it. While device is deployed, ensure buoyancy and water resistance while making sure the power output is not exposed to the water. Unlock generator turbine and return to land to connect the DC-to-AC converter.

VII. Thinking about the accidents that have occurred or that you have identified as a risk, describe emergency response procedures to use.

If an impact injury occurs, determine the extent of injury and what level of medical care is required. With respect to fatal have to electrocution, the only response at that point would be to contact emergency services. If the electrical injury is non-fatal, we would assess if medical treatment is necessary.

VIII. List emergency response contact information:

- Call 911 for injuries, fires or other emergency situations
- Call your department representative to report a facility concern

Name	Phone Number	Faculty or other COE emergency contact	Phone Number
Leon County Emergency Information	(850) 606-3700	Dr. Jerris Hooker	(850) 410-6463

IX. Safety review signatures

- Faculty Review update (required for project changes and as specified by faculty mentor)
- Updated safety reviews should occur for the following reasons:
  1. Faculty requires second review by this date:
  2. Faculty requires discussion and possibly a new safety review BEFORE proceeding with step(s)
  3. An accident or unexpected event has occurred (these must be reported to the faculty, who will decide if a new safety review should be performed.
  4. Changes have been made to the project.

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Report all accidents and near misses to faculty mentor.