Systems for Survival Poster

Problem:	A sustainable energy source is a need for a lunar settlement on the moon. One barrier is the lack of resources on the moon to help generate electricity. The intense temperature changes on the moon is another challenge to overcome. For a sustainable lunar settlement an energy source is needed for discovery and explanation to further expand human understanding. But one question is how do we accomplish this task of generating electricity on the moon?
Supporting Research:	Nuclear Fission Reactor: A nuclear fission or a steam powered reactor that can create energy - These can create enough energy to power the lunar campus. In our research normal reactors are 100 to 200 feet but these produce massive amounts of energy about exactly 13,968 megawatt hours of electricity. We can shrink this down to 10 feet which can still provide enough power to the area. - Nuclear power reactors (website) NEI - Nuclear reactor fundamentals (website) Steam and pressure: For the nuclear reactor to generate electricity we needed powerful steam. In our research we discovered that the tube has to be small so the steam is pressured. Steam basics CleanBoil (website)
Solution	Our solution is a 10 foot nuclear reactor which inside is ½ filled with water in a closed environment. For the steam to get pressurized we attached a small tube that connects to the turbine box. Then another wire is connected to the turbine box which will go into the water storage unit. Our solution has sensors to detect when the water runs out. When this time comes the sensors will be connected to a valve, opening it so the water can travel to the home base which would start over the whole process again and again. Justification for the solution: This nuclear reactor is an important segment of a lunar settlement because it provides more than enough energy for the 14 dark days. This process makes astronauts confident about their energy source because of the intense efficiency it has. Because of this, astronauts can continue on with their missions to further venture on to explore and discover more about the moon.
Pros:	• Provides a lot of energy to the settlement during the 14 days of darkness • Self efficient - Can work year round • Less people need to have a degree in nuclear fission or how to operate it - Easy to manage • No human input is involved
Cons:	• Solution is heavy and tall

	● Materials are very expensive ● Have to assemble on the moon ● Temperatures on the moon can affect ¼ of water