

Endeavor Inventeam's Progress Report 2

Our progress since our last progress report of November 3 has been subtle, but very useful. On our last report we have ordered the parts, which we applied for in our budget request. Since then we have received and verified that every item ordered has been shipped accordingly. We have also set up a more efficient system to organize the ordered parts. This system is designed to keep track of what has been used for what project and when that object was used/consumed. This will help us be honest with our selves and you at MIT.

As a team we have formulated a better working process, which is made up of four main groups. These groups include students who will specialize in sensors, system integration and control, enclosure and power, and communication and data analysis. Each team will hold separate meetings that will contribute to our work process. Each team is very aware of our lack of time, and as a result they are developing Gantt Charts to help keep them focused on the task ahead. Gantt Charts are a way of representing a timeline of events with a graphical representation. It separates out the tasks that must be completed for others to be done and other tasks that can be done individually. The groups are each in charge of a journal that will help to keep major ideas and steps, much like a scientific journal. Which will eventually lead into an entire team meet as often as once a week where every individual group will comment on progress and future goals. Each group will still possess the freedom to contact other groups at anytime and offer tips and assistance.

To further gain more knowledge on our invention, we have all taken a specific topic to research and identify specific points of interests within our projects. The topic included: Power Sources, ISM Band, Base Station, Methods of Data Recovery, Water Quality and Cell Phones, Local Water Quality Issues, Emplacement, Data Collection, GPS Systems, Sensors in general, and Water Quality Sensors. Each person will serve as a kind of expert on each subject. Their research has and will be used in the future to further develop our invention. After having a lengthy time researching, each person in turn submitted a research paper that varied from six to eight pages. Also everyone gave a very detailed presentation to the entire class.

We have completed the first part of our Micro-Controller Lesson, which is entitled What is a Micro-Controller? We have most recently started another lesson on Analog-Digital circuits, which will help us to gain more knowledge on writing programs for the "BASIC-Stamp Micro-Controller". Analog-Digital will come in handy when we start to integrate our sensors because the sensors output an analog signal, thus rendering our invention entirely digital. Serial connections will be a chief way in which we communicate in our invention. Because our BASIC Stamp only has fifteen analog/digital ports, we will need to use serial to take full advantage of the ports.

We are also redesigning our home web page, (the one off your servers), to coincide with what is on your servers. This web page will combine our data, such as our progress reports, our team info and budget. As of now our web page is in development and does not represent the quality of the final product. We feel that our community should be updated on our daily progress and information about the Endeavor Inventeam should be available to all who have interest. This web page can be accessed at <http://www.pasoschools.org/endeavour/general/InvenTeam/InvenTeam.htm>. We are expanding greatly into our community; we recently took a tour of a scientific drilling place called ATA or Applied Technologies Associates. They do a lot of the stuff that we will need to do in our invention. Like, for example, they use many sensors in very harsh environments that require 100% reliability. They also communicate remotely to their sensors using pulsing "mud". While the "mud" would not relate to us, the concepts of data logging and remote communication are very valuable.

Recently we have also contacted many businesses through phone calls and fliers who have an interest in our project and who desire to help the team through aid and assistance. We have invited these groups to a meeting that will be held in the first weeks of December. Although there is another meeting addressing the school board in which we will be talking about possible school funding which will in turn contribute to our invention. This meeting will be held on December 9, 2003, it will further our recognition of our invention to the public. We are also starting some fundraising for our trip to MIT in June. The money earned will be used for the financing of the trip and travel expenses, but any extra will be used for the further development of our invention.

Our next step in this invention is to decide on a way to send and receive our information from the base station to the field unit. Also the four different groups are working independently to complete their end of the project. For example the power and enclosure team has proposed a design that has been modeled and considered and work is soon to be put forth to the completion of this design. In our opinion this design will be the most effective and economically effective.

Our idea for this invention came from the lack of good water quality data in our area as well as many places around the world. The reason that we want to build a remote water quality sensor is that our sources told us that good water quality data was slow and hard to come by. The main theme of our invention is accessibility and user friendly information. To have a website where information is sent from a location under study would be key in experimental observations as well as long term contamination monitoring. We also have major connections in this problem region because of the companies that work with the information in our area. An example in applying our invention can be illustrated in the following. Anyone from a distinguished scientist to a ranch owner concerned with the water flowing to his crops or livestock. To apply our technology the invention be simply

placed into the field and with a flip of a switch begin to send readings from the sensors the project is equipped with. Our hope is to make this invention as cost friendly as possible, but concerns have been brought to our attention dealing with the price of each sensor if bought pre-made and the price of the communications that the user must pay each month. This raises another problem in our invention. To make this water quality sensor with so much advanced technology to send accurate information, while still making the invention to be cost effective enough to be bought and used at a reasonable price, which may be the problem that we will spend most of our time working out.

Our resources at Althouse and Meade environmental and ecological services have informed us that we need to have multiple sensors on our apparatus. We will need temperature, dissolved oxygen, turbidity, pH, conductivity, and color. These are important because they are directly connected to the pollution level of that body of water. We will then use this information to determine how polluted the water is.