# Tips for A Successful Mission

Below is a list of tips to help you make the most of the Space Station Alpha e-mission.

## A. Pre-Mission Preparation

1. A minimum of 15 45-minute class periods is recommended (three for each team and three for specific mission prep). This cannot be stressed enough. The best missions result from having a group of students who are familiar with the material.
2. Utilizing the practice data. Every team has a set of practice data that they can use to practice making the calculations necessary for their team. This enables the students to get comfortable and confident with the calculations. This is important also because the data comes at regular intervals of 5-7 minutes during the mission and they need to be able to calculate quickly and accurately. (Some teachers have made a "race" out of this to simulate the time pressure that the students will experience on Mission Day.)
3. Graph the practice data. This is important so that the students understand what the data actually means. It helps them by providing a visual of what is taking place, which is especially important as they calculate the "Time to Criticality." As they see the data rise and fall, they are able to make sense of when things are maintaining a normal level or when they are a cause for concern.
4. Become familiar with the Data Report Form so that they will know what they will be reporting to Mission Control.
5. Conduct a successful link-up with Challenger Mission Control. This enables you to make sure that there is the best connection possible.
6. Plan for emergency measures if the link fails mid-mission. Make sure that there is a phone in the room where the mission takes place so that you can communicate with Mission Control to work out technical problems. Have a technical support person on call. Have a speakerphone in the classroom in the event that the connection fails.

## B. Mission Day

1. Make sure that ALL forms that are needed for the mission (report forms, diagrams, data slips, graphs etc.) are copied and ready to go before the students arrive in the classroom. We recommend a different paper color for each team to help the Communications Team quickly distinguish one from the other. This will enable the mission to begin on time.
2. Communicate with Mission Control regarding when the class is over and if there is anything else that may impact the mission. This can be done through the chat window before the mission starts.

### C. Communications Team

1. Ideally, this team should have three or four people on it. One to be the primary communicator, two to be typing data into the chat window (if you have access to two computers) and one to coordinate the whole process.
2. The Coordinator would be responsible for receiving all the messages and categorizing them according to their priority level. They would also determine what information needs to be communicated orally and what can be sent through the chat window. Finally, they would be responsible for getting the attention of specific teams or the entire group when asked to do so by Mission Control. They need to be able to "work the room" and make sure that Mission Control is receiving a steady supply of information.
3. Select an outgoing person to be the primary communicator with Mission Control. This person needs to be comfortable with the sound of their own voice, because they will be talking the whole time.
4. The student(s) in charge of the chat window need to be fairly adept at typing. There are a lot of numbers that are sent and speed and accuracy are important.
5. It is also helpful to develop a system that sorts the data forms as they come in. One idea is to have three separate bins according to the priority level, either 1,2 or 3, and one for questions and answers that need to be communicated to Mission Control.

### D. Storm Team

1. Make sure that the Storm Team understands that they are the "early alert" team. If there is going to be a solar storm, they will be the first tam to know it! They also need to be the team that communicates it to the rest of the group so that everyone has as much advanced notice as possible.
2. Have the Storm Team graph their data on a large piece of poster board so that the class can see the x-ray and proton data to determine if there is cause for alarm.

### E. Radiation Team

1. The Radiation Team needs to pay close attention to the differences between the two TEPCs on board. This will be an indication of whether or not their shielding recommendations are effective.
2. They need to

### F. Life Support Team

1. The Life Support Team needs to recognize that their data needs to stay within a range, and therefore they need to make sure that the oxygen and carbon dioxide does not get too high or low. This is a little bit different from the other teams as they are only concerned with one "direction" with regard to time to criticality.
2. The Life Support Team also should pay attention to total atmospheric pressure…

### G. Power Team

1. Make sure that the Power Team does not get too zealous with the Power Systems Calculator.  They should be familiar with it, but should only begin to significantly manipulate power levels if the space station begins to lose power.
2. Remember – a state of draining is normal when the space station is in eclipse.  It is supposed to use around 35% of the battery reserve during that part of its orbit.

### H. Crisis Management Team

1. All members of this team need to also be a member of one of the other teams (Power, Storm, Radiation or Life Support).  They need to have done all of the same preparation and should be adept at the necessary calculations as well as have an understanding of the data that they are receiving.
2. Have a large diagram of Space Station Alpha that is located where the whole class can see it.  There should also be a chalkboard, flip chart or something where they can record the current status in the space station.  An example is below:

| Team | Time | Alert | Problem | Possible Solutions |
|------|------|-------|---------|--------------------|
| Power | UTC 16:40 | Red Level One | Batteries are not charging | Cut power to Life Support? |
|  |  |  |  |  |

3. Each member should be in regular communication with their team to keep them informed of what is happening with the rest of the space station.
4. It is critical for this team to be very familiar with the Reference Guide so that they can consider viable solutions in the midst of a crisis.