

NASA's Deep Impact Mission: Decision Making

Refining the Issues

PUBLIC FORUM ROLE SHEET

Mission Scientist

As a mission scientist, meeting the science objectives of the mission is the number one priority for you. These include:

1. Hit nucleus of 9P/Tempel 1 with sufficient kinetic energy to form a crater with a depth greater than twenty meters.
2. Observe nucleus for more than 10 minutes following impact.
3. Image nucleus impact, crater development, and inside of crater.
4. Obtain spectrometry of nucleus and inside of crater.
5. Acquire, store, format, and down link imagery and spectrometry data.

You have been interested in comets all of your life, and you see this as the best opportunity to make new discoveries about the inside of a comet. You are very open to availing yourself of all of the options for obtaining data for Deep Impact. You realize that much of the funding for this mission involves the use of onboard instruments that will image the impact and send the images to the Earth. Therefore the Deep Space Network is the primary collection method. Since various Earth-based observatories offer a different perspective of the comet, you are in favor of including as many large Earth-based observatories as possible. Telescopes above the Earth's atmosphere should also be used to obtain even more valuable data. You see this decision as being very important to the overall success of this mission, which will help scientists learn more about the small bodies of our solar system.

Mission Engineer

You have worked many space science missions in the past 20 years. You understand that it is critical to meet the science objectives for this mission. You have managed the design and construction of the spacecraft and most of the science instruments. You are confident that the instruments onboard are the best possible for imaging the impact of 9P/Tempel 1. You prefer to simply do everything possible to ensure a successful mission. Because of your experience with other missions, you believe that having redundant DSN sites available during the time of impact is the best way to ensure that data obtained from the spacecraft instruments will perform as designed. While you understand and respect the science team for wanting to use Earth-based observatories and the Deep Space Network, you often point out that timing the impact to use these facilities may compromise the redundancy of the Deep Space Network. At meetings you often point out that there are possibilities of weather issues and poor seeing conditions if Earth-based observatories are given priority. There is no mission without the use of the science instruments.

Space Agency Administrator

You have been a big advocate for this mission over the years. You know the principal investigator and many of the people on the science team personally. Your interest is that the mission is as successful as possible while maintaining fiscal responsibility. You have overseen past missions in which the spacecraft builder has provided instruments that provided success for these missions. You find it intriguing that there are so many options for obtaining data. You agree that having redundancy in the Deep Space Network would ensure mission success. Since the costs for adding the use of Earth-based and Earth-orbiting facilities are small compared to the science instruments onboard the spacecraft, you are not opposed to the mission planners pursuing these options. During a recent review, you gave the science team high marks for the comprehensive study of the comet by Earth-based observatories that have occurred thus far and will continue through the launch of the Deep Impact mission.

Astronomer

You have been observing far-away objects in our solar system for the last 30 years. You were the co-discoverer of several Kuiper belt objects during your time at a major observatory. Though you are not personally affiliated with any of observatories on the list, you have a strong interest in studying the images that will come from this mission after impact of Comet 9P/Tempel 1 in 2005. You hope to use the images to confirm your theories of the composition of comets, which will give us a better picture of the origin of our solar system. You are opposed to light pollution, which may be caused by people who use lighting fixtures that cause the light to shine into the sky. Light pollution makes it difficult for amateur astronomers to see objects in the nighttime sky. You are interested in working with amateur astronomers in getting images of the impact from the Deep Impact mission.

Environmentalist

You have been an environmentalist since the 1960's. You do not care for NASA or the missions that are funded. You believe the money that is used for space exploration should be used to make the environment clean for the next generation. You are personally concerned that this mission proposes to "impact a comet." You think that for years we have destroyed our own planet and that we should not destroy another world.

Public Citizen

You have been ambivalent to the space program, but enjoy watching science shows on the television. You discovered the Deep Impact mission while surfing the Internet. When you saw the mission homepage, you wanted to learn more about the mission. As a manager of a local business, you were intrigued with how the decisions that the science team and mission planner made in regard to the timing of impact closely resembled the process that you use everyday to make corporate decisions. You look forward to following this mission and watching about the impact on TV.

Education and Public Outreach Manager

As an education and public outreach manager, your job is to provide educators and the general public information and educational materials about the Deep Impact mission. Your goals are to increase public interest in space science as well as increase student awareness of space-related careers. You see the decision being made in the mission planning as a great example of the processes people need to make in their everyday lives. You think that the decision-making process is more important than the actual decision that is made.

Write your own roles here.