

New Horizons Risk Communication Strategy, Planning, Implementation and Lessons Learned

Introduction NASA has been launching spacecraft with nuclear power systems for over forty years. The level of controversy over these launches increased significantly after the Challenger accident in 1986, peaking with the widely expressed concerns over the Cassini launch in 1997. One of the lessons learned from the Cassini risk communication effort was the value of being prepared for the controversy by planning a timely, coordinated effort to widely convey the risks and the safety process. The Cassini experience and planning for the Mars Exploration Program led to the development and implementation of a set of risk communication goals and guiding principles which were adopted by the New Horizons mission. These in turn directed a more proactive, open, transparent communication and public engagement policy for New Horizons.

The planning for an enhanced risk communication effort began very early in the New Horizons project. A coordinated approach involving the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), the Applied Physics Laboratory (APL), the Southwest Research Institute (SwRI), the Jet Propulsion Laboratory (JPL), and their contractors was developed and implemented. This paper discusses the risk communication goals, strategy, planning process and product development for the New Horizons mission, including lessons from the Cassini mission that were applied in that effort, and presents lessons learned from the New Horizons effort that could be applicable to future missions.

New Horizons Launch

On January 19, 2006 the New Horizons spacecraft launched from Cape Canaveral Air Force Station, Florida for Pluto and the Kuiper Belt. The spacecraft's electrical power was supplied by a plutonium-fueled radioisotope thermoelectric generator (RTG). Though there was controversy around this mission, with several hundred letters to NASA opposing the launch and about a half-dozen requests for information from members of Congress, the controversy was much less than that which surrounded the Cassini launch in 1997.

New Horizons Risk Communication Planning

When planning for the New Horizons mission NASA recognized that RTG-powered missions invoke opposition. There had been increasing controversy with each mission, peaking in the widely expressed concerns preceding Cassini. The Cassini mission engendered hundreds of letters to the White House, dozens of Congressional inquiries including a letter by fifteen members of Congress opposing the mission, hundreds of media stories culminating in a '60 Minutes' episode (October 5, 1997), and a lawsuit. The most negative aspect of this controversy is that it deflected attention from the purpose of the mission, the Saturn and Titan science. It also caused undue fear among citizens of Florida, including a number of school children who wrote letters to NASA and to the White House (For one week in October, Cassini was the subject of more letters to

the White House than any other issue.¹ NASA's risk communications goals for the New Horizons project were to reduce or mitigate concerns surrounding the launch, and to allow the science to take center stage.

Cassini Lessons Learned and Mars Planning

As the planning for New Horizons risk communication began, the project adopted lessons learned from previous efforts. The most significant lessons learned from Cassini were incorporated into the risk communication planning. Those lessons were:

- the importance of a coordinated, well-defined, responsive process;
- the importance of having risk communication materials prepared well in advance of their need and having them available on the internet; and
- the importance of communication training for project spokespersons..

In addition, lessons from the planning for the Mars Exploration Program risk communication and public engagement efforts were incorporated including the importance of developing key goals and guiding principles that are adopted by all key project personnel, and the importance of advance community work in Florida.

Early Coordination and Planning

Using the lessons learned from Cassini and MEP as background, risk communication planning for New Horizons began very early in the project. A half-day risk communication kick-off meeting was held in June 2003 to discuss New Horizons risk communication goals, roles and responsibilities, product development and approval process, and spokesperson training. All key organizations and personnel were present, including the National Aeronautics and Space Administration (NASA, the program manager), Applied Physics Laboratory (APL, project manager), Southwest Research Institute (SwRI, Principle Investigator), Department of Energy (DOE, RTG developer and owner), Jet Propulsion Laboratory (JPL, National Environmental Policy Act [NEPA] compliance, launch approval and risk communication support), and SAIC, the NEPA compliance contractor.

Coordinating Responsibilities

Because the New Horizons mission involved people from many agencies and organizations it was important to have a very clear understanding of roles and responsibilities for risk communication. At the first meeting each organization was asked to provide the names of their risk communication spokesperson and others with risk communication responsibilities, and if more than one person in an organization had responsibilities, to delineate each person's role. The key roles were then defined. The spokespersons were those who would speak externally (e.g., to the media) to questions of risk. Other roles were to develop, review, and approve products, or to participate in external events. The fact that there was a clear understanding of these roles was important later as more people were brought into the risk communication effort.

¹ For more information on risk communication for past missions, see "Risk Communication Lessons from Planetary Missions", Sandra Dawson and Maria Sklar, American Nuclear Society, June 2005.

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Starting with the agreements made during the kick-off meeting, a risk communication plan, based on the Office of Space Science (now Science Mission Directorate) Risk Communication Plan for Planetary and Deep Space Missions, was developed. This plan outlined the New Horizons risk communication goals, roles and responsibilities, a risk communication process consisting of development, review and approval of products, identification and training of spokespersons and a defined response mechanism, a product development schedule, and the list of spokespersons and contacts. This plan was approved and signed by all cognizant managers.

It was also important that the roles of those who did not have immediate responsibility, but would have significant responsibilities later in the project, be included. Several offices did not engage until months before launch, and then had to be 'caught up'. Another challenge was turnover in the NASA public affairs office, where the NASA PAO for the project changed several times, and the 'final' permanent NASA PAO was not assigned until about a year before launch. An additional issue, later in the project, was a lack of understanding of the overlapping roles of NASA personnel who had responsibilities for responding to letters and emails. It became clear that in the future, the Program Communication and Inquiry Management Office (PCIM) should be involved at the beginning—as soon as a high visibility subject-matter candidate is identified. In addition, NASA gained an appreciation of the importance of better coordination between the PCIM and the PAO, and learned the value of being more proactive in advising employees to channel/redirect calls, e-mail and paper-mail to PCIM or authorized official spokespersons.

The goals and guiding principles for the New Horizons mission guided the development and implementation of the effort. They were:

Goals

- Earn and maintain the public's confidence;
- Identify and respond to a mosaic of diverse "publics," each with its own specific concerns, needs, and interests; and
- Ensure that clear, accurate, timely, and consistent information is readily available.

Guiding Principles

Principle 1: Be transparent:

- Be honest, candid, and open;
- Make information available and easily accessible, as early as possible;
- Use plain language;
- Ensure the transparency to the public of the process by which missions are chosen, designed and operated;
- Ensure that communications channels to the public easily provide information about safety, mission objectives and benefits, programmatic changes, successes

and failures.

Principle 2: Be inclusive:

- Seek as many perspectives as possible;
- Be sensitive to cultural differences.

Principle 3: Be interactive

- Listen respectfully and respond constructively to colleagues, critics, and supporters;
- Be clear in establishing where NASA can and is willing to accept input;
- Based on input, be open to modifications or new options

Risk Communication Implementation

A key to the achievement of the risk communication goals and guiding principles was the coordination of the plan and activities with all parts of the project. It was critical that all elements of the project, including science, NEPA compliance, education, and legislative affairs were supportive of the risk communication process and were sensitive to the need for review and coordination of all external products. This was of particular importance prior to the completion of the NEPA process, since the lawsuits against the Galileo, Ulysses, and Cassini missions all had NEPA non-compliance as the primary litigation issue.

To earn and maintain the public's trust, you must present the risks and benefits to the public early and often. To do that, and based on Cassini experience and feedback from current on-going proactive efforts on behalf of the Mars program that were occurring in Florida, the decision was to be as proactive as possible in getting materials on the APL New Horizons web site, and in presenting the project information to the media and to the public, especially in Florida. For example, briefings about the mission for the editors and senior reporters of KSC-area newspapers, and meetings with television news directors and staff at local network affiliates had provided information on the facts of the Cassini mission, leading to in-depth stories, so New Horizons made plans to do these media briefings as early as the media was willing to host them. Also, in developing the website for Cassini the nuclear safety web material was not readily accessible from the main page until close to launch, so for New Horizons the nuclear safety web material was designed to be easily found and accessed from the home page. (The New Horizons Nuclear Safety pages on the web had slightly over eight thousand visitors in 2005, and almost eight thousand in the first three months of 2006) To help meet the goal of being inclusive, the web materials on public launch safety were in Spanish as well as English.

During the Cassini mission concerns had been raised by KSC personnel, and past personnel, about risks to the local area from a potential launch accident. In addition, a number of KSC employees had been approached by the media to discuss the launch risks, and were not equipped to do this. For New Horizons, NASA recognized a need to provide a clear understanding of the risks to the employees and local citizens. For the

KSC employees there were two employee all-hands meetings; the first tied to the DEIS, the second a few months before launch; and there was an article in the KSC employee newsletter prior to the release of the FEIS explaining the risks. For the offsite area there was the DEIS public meeting, an on-site press conference, and a meeting with the Brevard County Commission and mayors from the surrounding towns. Because of the competing priorities of KSC personnel, much of the preparation work was done by NASA Headquarters and the project.

Identify and respond to a mosaic of diverse ‘publics’, each with its own specific concerns, needs, and interests.

Determining what issues are most likely to interest or concern the public is somewhere between an art and a science. A sense of what people cared about was elicited by continuous research into media stories, letters to NASA or to Congress, letters in response to NEPA, and public comments at NEPA meetings (see below). As concerns changed or new issues were added, additional responses to queries (RTQs, or anticipated questions and responses), fact sheets, and talking points were developed to respond. Because each New Horizon project member’s responsibilities and area of expertise were understood, it was fairly easy to get the question to the right person for response.

Another key to meeting the first two goals, and to providing transparency and being interactive, was the New Horizons NEPA process. The risk communication products were tied to the NEPA schedule, i.e., public scoping meeting, Draft EIS, Final EIS, and Record of Decision. The close coordination provided benefits for both NEPA compliance and risk communication. The public meeting and public comments provided information on the contents of the issues and concerns. Responses to queries (RTQs) were developed for all NEPA phases, i.e., Notice of Intent, Draft Environmental Impact Statement, Final Environmental Impact Statement, and Record of Decision. The risk communication staff supported the NEPA public meeting, which was led by NEPA contractor SAIC, and worked with the NEPA personnel to address the issues raised via email responses to the NOI and DEIS, and those raised at the DEIS public meeting. There were almost a thousand letters and emails in response to the DEIS, compared to about one hundred for Cassini.² The comments led to the development of several RTQs and of a fact sheet on emergency response. A major lesson from this is the advantage to both NEPA and risk communication of close coordination.

Ensuring that clear, accurate, and consistent information is readily available was one of the most difficult tasks. This is not due to lack of effort, but to the differences in thinking, speaking, and writing between project technical personnel and their audiences. The project personnel’s (and spokesperson’s) responses were very technically oriented and detailed. Time and effort went into consulting experts and working on simplifying the messages. However it was difficult to reconcile the varying needs of the technical personnel who are knowledgeable on the technical details of the spacecraft, mission, and

² However, of these 958 were emails (867 form submissions), and nine were letters; six from government agencies and three from individuals. The Cassini letters were mostly from individuals.

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launch risks with the Public Affairs and Science Mission Directorate program personnel, who wanted much shorter, less detailed talking points for public and media dissemination. The approach that would be recommended for the future would be a four-step process;

- develop and finalize a set of detailed RTQs for spokespersons;
- use those to develop a simpler, more accessible set of talking points, using outside experts when warranted;
- have the talking points reviewed and approved by all parties; and
- if there is still an issue, identify the specific source of differences, and raise the level of abstraction until you could obtain consensus.

Communication Training

To meet the goals of earning and maintaining confidence, and of ensuring that the best information was made available to the public, the spokespersons did considerable work to maximize their communications effectiveness. Prior to the Cassini launch, a number of national television and radio programs had segments on the launch risks. NASA and JPL managers who participated in communication training found it a valuable asset in getting their messages to the public. For New Horizons, all managers endorsed the need for effective communication training, and all spokespersons participated in the training, some more than once. The training, for which experts in communication were brought in, was focused on helping the spokesperson better convey the risks and benefits of the mission to the lay public, using talking points developed prior to and during the sessions. This was especially important for two reasons: the subject of radiation exposure and its potential health consequences was difficult to understand and easy to sensationalize; and the risks were presented in a probabilistic risk assessment format which was not easily understood. The managers unanimously endorsed the training, and the results were obvious as they went forward in the public meetings and interviews.

The experience with past missions demonstrated that preparation for launch often raises new issues which must be responded to quickly, but within the approved process of review and approval. Because some of the key participants in resolving launch issues were KSC and Air Force personnel, it was important that they were kept up to date on risk communication materials and processes throughout the mission, and provided with communication training. This was the case for New Horizons. The issue of the potential for nuclear safety issues to arise from the qualification test failure of a tank similar to one used on the New Horizons Atlas V launch vehicle, emerged within weeks of the launch. Quick response by NASA HQ, KSC, the Air Force, APL, DOE, Lockheed Martin and others enabled a quick response to the questions that were raised by the media. The process for getting questions and responses approved worked well. Variations on safety questions were posed by various reporters, and responses were developed and provided to them within hours. These responses were almost always slightly edited versions of the RTQs prepared much earlier. NASA HQ continued responding to letters, emails and phone calls during this period using the prepared materials, and the slight revision, and

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the distribution of responsive materials was accomplished, based on the approved process.

The responsibility of ensuring that communication channels to the public easily provide information about safety during launch is part of NASA's Federal requirement for contingency planning. For New Horizons, as for all nuclear systems launches, there was a multi-agency Joint Information Center (JIC) established. The JIC had participants from NASA HQ (PAO, SMD, External Relations, and Exploration Systems Mission Directorate), the Air Force, KSC, DOE, JPL, Department of Homeland Security, Federal Emergency Management Agency, the State of Florida, and Brevard County. This group exercised its role a week prior to launch, based on a plan developed by NASA, with observation by several NASA officials. Based on the feedback of the observers, and of the JIC participants, a number of changes were made. The JIC processes were improved and functioned well during the launch. However, earlier development of the JIC plan and earlier participation by agencies outside NASA is recommended for the future. A key lesson is the importance of earlier assignment of those who supporting the JIC, and the value and their full and focused participation in planning.

During the week before launch DOE personnel developed descriptions of DOE detection equipment, that were extremely valuable, and would have been used extensively had there been an accident. There was also a demonstration of the equipment for the media prior to launch that was well attended and well-covered by the media. DOE Nevada personnel were responsible for the development of the descriptions and for the demonstration. The materials and demonstration were of good quality and great value. The lesson from this is that bringing in personnel with different expertise, such as DOE Nevada personnel for New Horizons, can provide activities and products that provide new avenues of information for the public and media.

Conclusions

New Horizons was the fourth RTG launch since Challenger, in addition to the Mars Pathfinder and Mars Exploration Rover missions which used radioisotope heater units (RHUs). The well-defined goals and objectives and risk communication processes, experienced personnel, supportive program and project management, cooperation of many engineering, science, and administrative staff people, and application of lessons learned from past missions were the key factors in the risk communication efforts functioning efficiently and effectively. At the end of a project, taking the time to consider and record new lessons learned, and adding them to those from previous projects is a valuable part of continuous improvement.