APPL

The NASA Academy
of Program and Project Leadership

ASK Magazine

Academy Sharing Knowledge
The NASA source for project management

Issue 9 October 2002

By practitioners for practitioners

"Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world. "

- Albert Einstein

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IN THIS ISSUE

Coming Up Aces
by Todd Post

ABOUT THE AUTHOR

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You can contact Todd at **tpost@edutechltd.com** and tell him what you think about this issue of ASK.

Coming Up Aces

If you're like me, you find the science on NASA missions fascinating. The scientists themselves are almost as interesting to me as the worlds they study. Allan Frandsen's story, "A Gentle Touch," addresses the sometimes thorny relationship between scientists and the people who have to manage a project. How did Frandsen, science payloads manager on the Advanced Composition Explorer (ACE), engender trust in a science team whose initial impression of him was "requirements enforcer"? For starters, he developed a gentle touch.

Most of this issue is about ACE. We've collected stories by four members of the ACE management team: Don Margolies, the mission manager from Goddard Space Flight Center; Frandsen, science payloads manager from the Caltech Jet Propulsion Laboratory; Mary Chiu, project manager in charge of spacecraft development at the Johns Hopkins Applied Physics Laboratory; and Frank Snow, operations and ground systems manager at Goddard.

How many perspectives does it take to understand a whole project? Certainly more than we've got room for in one issue. While we don't believe we can provide you with a complete picture of the ACE project in one issue, we think you can get a pretty good idea of what it's like for several people to work together towards achieving a common goal.

Frank Snow does double duty for us this issue with a Story and a Practice. In the latter, "The Tried and True," he talks about his team's fondness for a Chinese restaurant. Although it's only a couple of stoplights down the road from work, the restaurant may as well be in Shanghai given how far it feels from the demands of the project. It's where the team goes to celebrate milestones, birthdays and anniversaries, and also to settle differences that come up between team members. This is the situation Snow describes in "The Tried and True."

The stories by Don Margolies and Mary Chiu look at the same episode of the ACE project, but present two very different points of view. Chiu (APL) was the project manager for the contractor, Margolies (NASA) the customer. As you may suspect, the two parties sometimes disagree on what's best for the project. These stories demonstrate how customer and contractor can disagree on an important issue, and yet not let that poison an otherwise good working relationship.

The ACE stories here are part of a larger project that Drs. Edward Hoffman (APPL Director) and Alexander Laufer (ASK Editor-in Chief) and I are working

on with members of the ACE team. Together, we're developing a case study on ACE with some 20 to 30 stories. We think this is a unique approach to a case study about project management. Decision-making in project management doesn't always translate into lists of Do's and Don'ts. Only stories are sufficiently nuanced to convey the complexity of project management decision-making. This is why we use stories as our medium in ASK.

In addition to the ACE stories in this issue, Drs. Hoffman and Laufer are here as per usual; so are feature writers Scott Cameron and Terry Little. This month's interview is with Judy Stokley, a maverick of a program manager in the Air Force. It's a full hand, alright. Aces turn up everywhere.

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FROM THE DIRECTOR'S DESK

Hearts Lifted To Heaven

by Dr. Edward Hoffman

I came upon this story in the book Gates of Prayer, and it reminded me of an experience I had a couple of years ago. In the story, a spiritual leader of a community refused to enter a House of Prayer. He said, "I cannot enter, it is crowded with teachings and prayers from wall to wall and from floor to ceiling. How could there be room for me?" He could see that those around him were unable to understand, so he added: "The words of those whose teaching and praying does not come from hearts lifted to heaven cannot rise to heaven; instead, their words fill the house from wall to wall and from floor to ceiling."

This reminded me of when I was with a team visiting industry leaders to see what we could learn from benchmarking. I was escorted to a large conference room and asked to make myself comfortable as we waited for some people who were about to join us. I was struck by all the colorful charts, graphs, and reports crowding the walls. I walked up close to several and laughed at their complexity. Obviously much effort had gone into their creation and maintenance, and certainly they held deep meaning for someone, but for the life of me I could not understand what they were trying to communicate.

When my host returned, I mentioned that I was impressed by the wall of measures but could not decipher their meaning. Could she explain how they were used? She chuckled and whispered to me, "please don't say I said this, but the wall is used because we have a major organizational emphasis on metrics, so we've put together any measures that we can think of and placed them on the wall. When our senior leader wants to see evidence of our commitment to metrics, we take him into this room and so far that has satisfied him. In terms of their usefulness, our people don't do anything with them."

Instead of hearts lifted to heaven, here we find metrics from wall to wall.

ABOUT THE AUTHOR

Dr. Edward Hoffman is Director of the NASA Academy of Program and Project Leadership. He is responsible for the development of program and project leaders and teams within NASA. Dr. Hoffman develops training curricula, consulting services, research projects and special studies in program and project management. You can contact him at **ehoffman@hq.nasa.gov.**

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LETTER FROM THE EDITOR-IN-CHIEF

ABOUT THE AUTHOR

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Timing is the Key

by Dr. Alexander Laufer

When should one make decisions during project planning: early or late? Well, as the following two stories illustrate, the answer is simple: it depends.

> During the design of an industrial plant, a critical decision was not addressed until late in the definition phase. The product manufactured at the plant had been packaged the same way for many years, and so the project manager assumed there would be no significant change. The product had always been released in a wrapper. The marketing department determined that a carton rather than a wrapper was now more appropriate. Although the wrapped version could be produced at the selected site, a carton version would require an additional building and entirely new equipment. Other sites had been rejected that did have the capacity for carton packaging. The sudden discovery of marketing's desire to change packaging, due to its late timing, significantly affected the execution plan, project schedule, capital cost, and the overall profitability of the project.

The next story demonstrates what can occur when decisions are made too early.

> Early on in a multi-site project, the project team decided to standardize design (e.g., to use the same equipment for a given operation at all sites). This decision led to the formation of a new centralized engineering organization to replace the existing site-based organizations. By the time it was found that this design-standardizing strategy was wrong, many resources had been wasted on establishing the new engineering organization. As it turned out, the project team had actually been aware that there was no need to rush the decision on standardization at such an early stage. At the time, they had thought it "proper" to issue one complete package of all the strategies.

As you see, the timing of decisions demands careful consideration. A general rule of thumb: when information required for decision-making is incomplete or unstable, postpone the decision.

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STORIES

Test What You Fly?

by Don Margolies

It was the first time on any NASA project I know of that all the instruments on an observatory came off for rework or calibration after the full range of environmental tests, and then were reintegrated at the launch center without the benefit of an observatory environmental retest.

Perhaps you've heard the expression, "Test what you fly, fly what you test"? In theory, it's hard to argue with that. In this case, I was willing to take the risk of not testing what I flew. As the project manager for the Advanced Composition Explorer (ACE) mission, I was the one who ultimately decided what risks to take, just as it was my responsibility to get buy-in from the stakeholders.

Whatever Possessed Me?

The ACE observatory had a suite of nine instruments and an electronics box that interfaced with a number of the instruments. We had planned from the outset of the project to remove three of the instruments to have microchannel plates replaced and be re-calibrated. Our implementation plans took this into account, and we developed retest programs for the individual instruments. Subsequent developments changed this plan significantly, when I authorized the removal of all instruments and the electronics interface box.

Several people on the project thought I was crazy. Why do this? We had gone through our environmental test programs successfully, and everything seemed to be working okay. We had previously stated that the only reasons for removing an instrument after environmental testing would be either because it was one of the three mentioned earlier, or because something had broken and needed to be fixed.

Normally, I would have taken a pragmatic approach: "You're on the observatory, your instruments are working, and good enough is good enough." On the other hand, we had more than adequate slack in the schedule, and we were coming in $30 million under budget--amazing, I know. The question then was, what could we do to make the science better? Given that we had the time, given that we had the money, one answer to this question was: better calibration. For those who just do a marginal job of calibration prior to testing, the alternative is to calibrate again in orbit. Calibration in orbit takes a long time to do, and it's not as precise as it is on the ground. So there really was a net benefit to be gained from the science of doing this. If our scientists had the opportunity to tweak and calibrate their instruments on the ground, they would likely get better science in space. In order to provide a proper return on our $100M NASA investment, ACE--an Office of Space Science mission--had to perform on all cylinders, so to speak.

ABOUT THE AUTHOR

Donald Margolies was Project Manager for the Advanced Composition Explorer (ACE) mission, launched in 1997 and still operating successfully. He received the NASA Medal for Outstanding Leadership for his work on ACE and a NASA Exceptional Service Medal for the Active Magnetospheric Particle Tracer Explorers (AMPTE) mission. Don and his wife Joan have been married for 41 years. They have two children and five grandchildren.

Test What You Fly? (cont'd)

Dealing With My Stakeholders

How do you evaluate the risk of putting an instrument back on without retesting it under vibration? That was the question my management put to me. When I approached them about this, they thought I was crazy. "Don, you are crazy," they told me, in fact--but I had known I was going to hear this, and was prepared to explain.

> "How do you evaluate the risk of putting an instrument back on without retesting it under vibration?"

The way that the spacecraft was designed it made the job of removing the instruments and reintegrating them very simple. The instruments were mounted on the outside of the spacecraft and easily accessible. You basically disconnected the connectors--and there weren't that many--removed the mounting bolts, and lifted off the boxes. When you re-bolted them down, you made sure of their mechanical integrity, and you did functional tests on each of the instruments to verify that they were working okay. The solar panels were off anyway at this point, so if we had had to get into the guts of the spacecraft that would not have posed a problem.

Now this may all sound well and good on paper, but you don't persuade your management to do something it usually does not want to do just by sounding logical. When you want to do something this radically different, you have to be cool and clear in how you present the issue. The last thing you want to seem is impulsive. Upper management wants to hear that things have been checked out according to protocol. They sleep better when they know that protocol has been followed ("Test what you fly, fly what you test"), and consequently a project manager sleeps better when he knows his management isn't tossing and turning about a decision he's made.

"Yes," I admitted, "when we reintegrate everything we will not have the same degree of certainty as we did before the testing. Without another vibration test, no one would ever be able to say categorically that these instruments will hold up under the stress of launch."

Ultimately, I was able to get management to buy off on the decision, but not without first making an independent review of our plans. The review board agreed with me that based on the design of the spacecraft reintegration would be "less complex" than it could be. The fact that all instruments would be environmentally tested before they were returned to the spacecraft also helped. But there were other stakeholders, including those at headquarters, whom I also had to convince.

Test What You Fly? (cont'd)

The Folks Who Were Doing The Work

The person I was most concerned about was the project manager of the organization that was building the spacecraft, the Johns Hopkins Applied Physics Laboratory (APL). It was APL's responsibility to reintegrate the instruments, and I knew the APL project manager, Mary Chiu, had hardly been delighted when I told her what I wanted to do. In fact, it was she who reminded me before anybody else that you should "Test what you fly, fly what you test."

This is the logo for the Advanced Composition Explorer (ACE) mission, which was launched in August 1997. ACE is studying low-energy particles of solar energy and high-energy galactic particles, and continues to collect data that scientists use today to understand our universe.

Test What You Fly? (cont'd)

Mary never yelled or screamed or jumped up and down and said no, we can't do this; and I don't believe she ever said, "Don, you are crazy," (at least, not to my face like my management did); but she did voice her displeasure in writing, and this was not something I took lightly.

We talked about it exhaustively, especially in terms of what the impact on her team would be. Mary was definitely a key part of the planning process because it was going to be up to her people to reintegrate the instruments, as well as to do all the other things we needed to do as the launch date approached. Now, I wouldn't have changed the plans had I thought the APL team felt I was running an impossible risk. Getting Mary's buy-in, albeit a reluctant buy-in, was a major precondition for going through with this.

"The scientists were told that if they did not get their instruments back in time, they might not fly."

I left it up to Mary to decide when she needed all the instruments on site. The way the instruments' schedules were laid out, they were going to arrive in a waterfall fashion so there would be adequate time to integrate them. If they all showed up at the door the same day, Mary's team would really have to hustle, and I didn't want that. The APL team was working very hard as it was. I had to make sure they were taken care of, so Mary's schedule dates were what the scientists committed to.

And Then There Were The Scientists

In order to even consider this risk in the first place, I had to have complete faith in the scientists I was working with. More than any of the others, they were the group who would determine whether or not we could accept such a risk. How did I guarantee their full cooperation? The scientists were told that if they did not get their instruments back in time, they might not fly. They understood that, and more importantly, they believed it. I know they did because the Principal Investigator, Dr. Stone, stood behind me on this. I insisted that each of the co-investigators write a letter to Dr. Stone promising that they would return their instrument no later than the date given them. I don't know whether or not they would have written such a letter to me, but based on what I had seen so far, I knew that once they promised Dr. Stone, no matter what condition the instrument was in--whether it was fully calibrated or not--it would arrive by the day they had agreed it would.

Our Science Team knew that our primary objective was to launch on schedule. They also knew that because of some science overlap in the instruments, we would be willing to leave an instrument on the ground if we had to. The truth of

Test What You Fly? (cont'd)

the matter was that despite what we had said outwardly, our goal was always to fly a complete science suite, with all instruments functioning as well as they could, and with all the appropriate calibrations.

And so it all worked out in the end. The orderly return of the instruments didn't happen exactly as we had planned, but due to the skill and dedication of the APL team we reintegrated the instruments at the launch site, and launched ACE within four days of the date we had specified three and a half years earlier. This happened because people were willing to work with one another to make it happen. The proof, I believe, is that the instruments have been working for almost five years now and are providing wonderful scientific results.

Question

When do you know it's okay to break a rule?

Lessons

- Project principles should be adjusted to suit particular circumstances. However, before you break a rule, consider the ramifications and understand the importance of getting buy-in from all those who have a stake in making something happen.
- Lead by influence rather than authority, by seeking cooperation rather than using solicitation, and you are much more likely to get buy-in from your team.

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ABOUT THE AUTHOR

Allan Frandsen retired from NASA after a 36-year career, most of it at the Jet Propulsion Laboratory (JPL) in Pasadena, California, working on space science programs. His last assignment was as Science Payload Manager for the Advanced Composition Explorer (ACE) mission. During the 1980s he spent four years at the Office of Space Science at NASA Headquarters where he managed a number of successful programs.

A Gentle Touch

by Allan Frandsen

One aspect of my job as Payload Manager on the Advanced Composition Explorer (ACE) mission involved keeping track of what the different science teams were working on, and offering help where it was needed. At first it seemed like many of the scientists or their technical staff were not sure how safe it was to confide in me. Everybody knew I had spent most of my career with NASA at the Jet Propulsion Laboratory (JPL). All of my staff, initially four of them, came from JPL too. Left to our own devices, would we impose onerous NASA rules that could stifle innovation in the ACE mission instrument development labs?

The challenge to my team was getting the science groups to regard us as partners, or as people who could help them rather than as what they seemed to expect--a troop of requirements enforcers. There were nine instruments and twenty Co-Investigators (Co-Is) involved in ACE. They were scattered across the U.S., Switzerland, and Germany, mostly at universities and a few government labs.

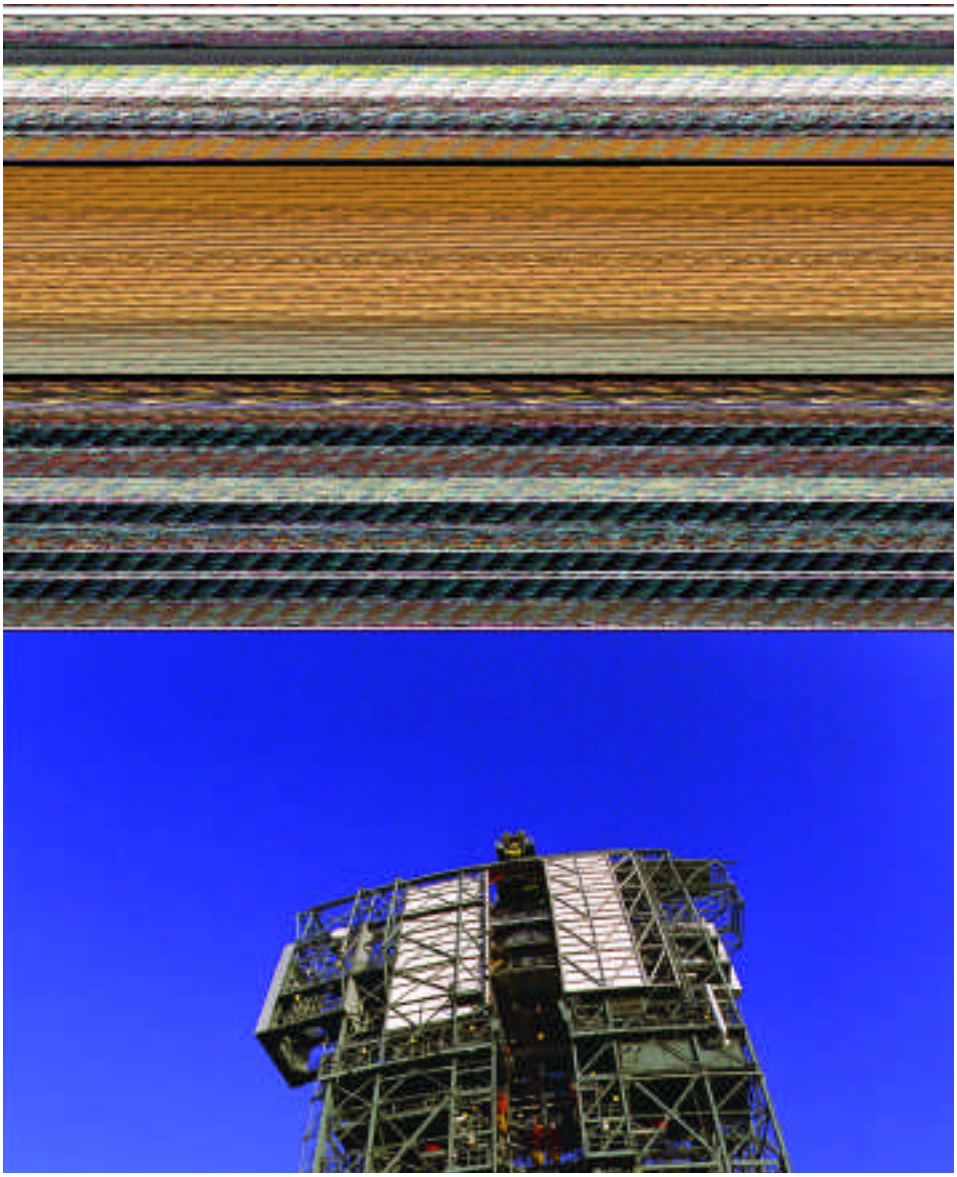
At one university in particular, a designer held things very close to his chest. At first, we could barely get him to acknowledge we were in the room with him, until we arranged to help him solve a power supply problem. His boss, one of the Co-Is, recognized the contribution made by us outsiders, and figured maybe we could help solve a sensor head problem. There was no pressure; we waited for the skeptical designer to approach us. And when he did, we didn't press him to let us get more involved. It was that kind of gentle touch that eventually changed peoples' perception about what we were on this project for.

From the start, I decided a gentle touch was the best approach. Dr. Edward Stone, the Principal Investigator, had assembled a number of very experienced Co-Is with the nine instruments. I knew of the strong relationships that had existed before I got there and would continue to exist after I left. I never tried to put myself between Dr. Stone and his science teams. I wasn't about to say to the Co-Is, "You can't report to Dr. Stone, you've got to report to me first and I'll report to him." That would be dumb, I thought, and certainly do little to improve our standing at their labs.

A lot of it just came down to working hard with the Co-Is at solving development problems, and building their trust in the process. When you spend days and nights with people, and you suffer with them, they begin to realize that you're all on the same team. At the same time, they all knew we could bring outside resources to bear in addressing special problems. But our work also involved a clever amount of requirements tailoring.

STORIES: ALLAN FRANDSEN

A Gentle Touch (cont'd)



"When you spend days and nights with people, and you suffer with them, they begin to realize that you're all on the same team."

The first phase of the Delta II rocket - which will be used to launch the Advanced Composition Explorer (ACE) spacecraft - is erected in Launch Complex 17A, at Cape Canaveral Air Station. The Delta launch vehicle dropped off long before the observatory continued its push into deep space, where it orbits almost a million miles (1.5 million kilometers) away from the earth.

A Gentle Touch (cont'd)

I enjoyed telling people about how my payload team had adapted to the university environment in the spirit, if not the letter, of NASA practices. Understand: we still had to meet our own requirements and satisfy the Goddard project office. In the reliability and quality assurance (R&QA) area, for instance, we were expected to audit work processes used at "the contractor's site." In this case, that frequently translated to "at the universities." Well, that word "audit" can create a terrified look on some people's faces at the working level. But to begin the necessary audit on a low key, I can recall my visiting R&QA Manager walking down the hall at one university with his arm over a technician's shoulder, asking how's it going, what's happening here. All the time, that technician never realized this was part of a work-process audit.

Throughout, a gentle touch paid off, and kept everyone working together toward the same goal: delivery of a performing payload, on time, and within budget.

Question

What lessons have you had to relearn throughout your career?

Lessons:

- Building trust is crucial to establishing teaming relationships across different groups. Sometimes the best way of establishing trust with a partner is by recognizing that an unobtrusive approach goes further than an assertive one.

- The best way to learn what is actually going on is just by establishing open communication. Consider "auditing-by-walking-around" as just an extension of "managing-by-walking-around."

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Customer Responsiveness

by Mary Chiu

If you know anyone who's been involved in building a spacecraft, I'm sure you've heard the mantra, "Test what you fly, and fly what you test." Listen to a project manager from my institution (The Johns Hopkins Applied Physics Laboratory, a.k.a. APL) talking in his or her sleep, and this is likely what you're going to hear.

At APL, we do a lot of testing. We probably do more testing in the initial stages of a project than we could explain to review boards. Perhaps we are conservative in this respect, but our project managers and engineers believe in getting a good night's sleep before a launch, and testing is a good way of ensuring that.

So you can imagine my reaction when the NASA project manager, Don Margolies, suggested that on the Advanced Composition Explorer (ACE) mission we pull all the instruments off the spacecraft after we had just completed the full range of environmental testing. This would allow the scientists to do a better job of calibrating their instruments. I remember the scene well because it haunted me for weeks afterwards. We had just come out of the last thermal vac test at Goddard, and one by one the instruments, nine in all, were pulled off and returned to their developers for more tests of their own.

After I picked myself up off the floor, I began to think about that other mantra we hear quite a bit in this industry: "The customer is always right." In theory, maybe. To his credit, Don accepted the responsibility (in writing) for this action and did everything he could to make sure the instruments would be returned in time for us to reintegrate them--and to involve me in that process--but I don't want to minimize the impact on my team. There were certainly a lot of late nights towards the end as instruments came in right on the wire, maybe even a little later than the wire. This is not something I would want to do again; however, I would if I had a customer who was reasonable and understood that it wasn't just something he wanted, but something we must work through together.

Now contrast this with another situation that had occurred earlier in the project. A couple of months after the Critical Design Review (CDR), some people over in the NASA project office were saying, why not use a different data handling format? With all the really neat things being done on other spacecraft, why are we getting this "old-fashioned" data handling system?

For my team at APL, the ones who were going to build the spacecraft, this was no small matter. To change to a different data handling system at this point would have required a major restructuring of the spacecraft's design. Understand:

ABOUT THE AUTHOR

Mary Chiu has been a program manager in the Space Department at the Johns Hopkins Applied Physics Lab (APL) since 1985. She has managed a variety of programs, including the APL UltraStable Oscillator programs for the Navy (NRL) and NASA (Mars Observer, EUVE, Cassini); Altimeters for the Navy (SPINSAT); and NASA spacecraft (ACE, CONTOUR). She is currently Project Manager for the CONTOUR mission, which is part of NASA's Discovery Program.

Customer Responsiveness (cont'd)

we were already proceeding along with fabrication, and major changes of this sort were not to be taken lightly.

ACE was supposed to be a simple spacecraft, and that's why we had decided on a simple, albeit "old-fashioned," data handling system. Early on in the project,

The John Hopkins Applied Physics Laboratory in Columbia, Maryland had responsibility for building the Advanced Composition Explorer (ACE) spacecraft. Scientific instruments were mounted on the outisde of the spacecraft, providing workers with easy access when they had to be removed following the integration and testing phase of the project.

Customer Responsiveness (cont'd)

my lead engineer on the Data Handling System, Rich Conde, worked this out with the Principal Investigator, Dr. Edward Stone. Indeed, it was Dr. Stone's decision to go with this type of data handling system. At one of the reviews, Rich said, "This is the most simplified approach, and this will be the most straightforward to develop and to test. Is this the way you want to go?" He then presented the options, and Dr. Stone said "keep it simple." In fact, "keep it simple" became our mantra. We thought that was the end of the issue.

When the project office at NASA says, why can't you do this and not that?, the last thing you want to do is ignore them. I got my leads together to formulate our position, and then I responded to the project office by writing a paper, explaining the ramifications of such a change. Well, apparently that wasn't good enough. What they sent back to us we already knew. Newer data handling systems provide reprogrammability, meaning that if one instrument shuts down you can send more data to the other instruments, and isn't that a good thing? Yes, of course it is; but the point I had to keep coming back to, the crux of the issue as far as I was concerned, was that we had not intended the system to be reprogrammable at the CDR.

> "There were several comments intimating that the people on my team were not a 'can-do' group."

We went round and round about that, and there was quite a bit of paper exchange. "Okay," I said at last, "if you want to give us a change order, fine, I'll give you the impact statement, and it will be in cost and schedule. If you still want to change from what was agreed on in the CDR, that's fine too," but I made clear that they couldn't change requirements this radically and still maintain the original schedule.

This was probably my first real test as a project manager. I was new at this and I decided that I was not going to get tagged the first time out. Younger than normal for a project manager at APL, and also female--the first female project manager at APL on a project this big--I had sparked some concern in the project office as to whether I was up to the challenge. So I had something to prove too.

There were several comments intimating that the people on my team were not a "can-do" group. That upset many of us. Like any highly motivated team, we took pride in our work, and I had to negotiate with the group in making sure none of this unpleasantness escalated into something that might have a corrosive effect on the project. I spent time coaching people as to how they should behave: "Okay, you're professionals and we know you are good," I told them. "These are our customers, and we always have to be courteous. You still have to make yourself available to them. They will be here talking to our people. Questions get asked, and that's only natural, but if questions start sounding more like directions, or why

Customer Responsiveness (cont'd)

don't you do this or why don't you do that, very politely say, 'Well, that's an interesting idea, but let's bring Mary into this and discuss it at the project level.'"

> "The customer is always right--in theory --but nothing in a space flight program is ever simple to change and it can have ramification that you may not realize until later."

Naturally, you want to have open communication with the customer, but you also have to monitor how people respond to things. Overall, I think the team, myself included, became a lot better at approaching communications during this experience. What we did a better job of as time went by was to not just say "no", but "no because if you do this it will impact this, this, and this." Once you explain things like that, rather than just flat-out saying "no", you're not as likely to hear the customer come back to you with "What do you mean you can't do that? It seems like such an easy change to me." Yes, we faced some awkward situations, but mostly the team did a fabulous job of addressing customer concerns.

One thing I learned on ACE is that you have to decide what is really worth putting your relationship with the customer in jeopardy over. There were times when I didn't agree with what the customer wanted, but I was still going to do whatever I could to accommodate a customer request. The customer is always right--in theory--but nothing in a space flight program is ever a simple change, and it can have ramifications that you may not realize until later. Sometimes you have to point out to the customer that what is being asked for may not be in the best interest of the project.

Question

Given that trust and openness are critical to a successful contractor-customer relationship, what do you do as the project manager for the contractor when you cannot develop a trusting relationship with your customer?

Ultimately, we resolved to stick with the original data handling system, but there was quite a bit of unpleasantness during this time. Now, contrast this with what happened later in the project. In the case of reintegrating the instruments, although I disagreed with what we were asked to do, I was able to work with the customer on it because it was clear we must cooperate together. Don consulted with me, listened to my concerns, worked around my concerns, and in the end treated me as a partner. Now this was a much different experience than we'd had earlier in the project with the data handling system, and illustrates just how much two separate entities can accomplish in a spirit of cooperation.

Lessons

- The project manager should use the input of her leads to defend positions about project issues, but it is the project manager's responsibility to speak to the project's customer.
- Cooperation between stakeholders on a project is critical in resolving conflicts.

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STORIES

Two Outs, Bottom of the Ninth

by Frank Snow

It was eight months before launch when my second Flight Operations Team lead said he was leaving the project for another job. Six months earlier, the original lead had said he was leaving. I was stunned--but I remained confident that we would recover. I didn't expect to lose the second lead. After all, lightning is not supposed to strike twice in the same place. This time, with only eight months until launch, I was very much concerned. No, "concerned" is probably too mild a word. Let's get it right: I was sweating.

Losing a lead at any stage presents problems, but two losses within 6 months of each other can definitely shake the confidence of an inexperienced Flight Ops Team. Immediately after launch the Flight Ops Team would be providing crucial support to two highly professional groups: the flight dynamics engineers at Goddard Space Flight Center, and the Science Team with scientists from many U.S. and European universities. The Flight Ops Team would support the critical orbit and attitude maneuvers needed for the transfer of the Advanced Composition Explorer (ACE) spacecraft to an orbit one million miles from Earth. In addition, the Flight Ops Team would provide the interface with the spacecraft as the scientists activated and calibrated nine sensitive instruments. Many of these scientists had over twenty years of flight hardware experience, and had devoted over five years to the ACE instruments. If the engineers and scientists did not have complete confidence in the abilities of the Flight Ops Team, we would have to delay launch.

Typically, people see the Flight Ops Team as a bunch of desk jockeys who don't do much more than look at screens, but in reality, after launch, the Flight Ops Team is the first line of defense when things go wrong. Sometimes the team has to make decisions in a matter of minutes, even seconds. They have to decide, "Do I need to do something quickly, or can I wait until I get some additional information and recommendations from the design engineers?" When the Flight Ops Team does react quickly, they depend upon training received during mission simulations, but sometimes an anomaly occurs that cannot be solved with "canned" procedures. In situations like these, you need a Flight Ops Team that can make decisions based upon a fundamental understanding of the spacecraft and how the spacecraft responded to ground testing.

We did several things on the ACE Mission that were new at the time for NASA. One was to bring the Flight Ops lead, and a couple of members of the team, on early. We brought the first lead onto the project 3 years before launch. That was

ABOUT THE AUTHOR

Frank Snow has been a member of the NASA Explorer Program at Goddard Space Flight Center since 1992. He was the Ground Manger for the Advanced Composition Explorer (ACE), the project manager for the Reuven Ramaty High Energy Solar Spectroscopic Explorer (RHESSI), launched in February, 2002, and is presently the project manager for the Galaxy Explorer (GALEX), which will launch in September, 2002. Frank began his career with NASA in 1980. He lives in Bethesda, Maryland, with his understanding wife, teenage daughter, black Labrador, and an uninvited field mouse.

Two Outs, Bottom of the Ninth (cont'd)

"Losing a lead at any stage presents problems, but two losses within six months of each other can definitely shake the confidence of an unexperienced Flight Ops Team."

After launch, the Flight Operations Team is the first line of defense if anything goes wrong with the spacecraft. On ACE, the Flight Ops was exceptionally well-trained and versatile. Here a team is pictured working out of the Mission Operations Center.

unprecedented in all my years of experience as a Ground Systems Manager. We wanted the lead to participate in the definition, development, integration and testing of the spacecraft, including the nine instruments, and then transfer this knowledge to the rest of the team. We aimed to create a new paradigm with the ACE Flight Ops Team: a team that had experience with the integration and testing of the spacecraft and instruments. In this way, they would be prepared for all spacecraft emergencies, and also provide the other groups in the Mission Operations Team a knowledgeable user-friendly interface with the orbiting spacecraft.

Whom Do I Send To The Plate?

With the loss of the second Flight Ops Team lead, and only eight months to prepare, I had a sinking feeling in my stomach. I was forced to rethink what qualifications I needed for the Flight Ops Team lead. No longer did extensive opera-

Two Outs, Bottom of the Ninth (cont'd)

tional experience seem the one and only prerequisite. I needed someone who could turn eight people into a competent, cohesive, motivated Flight Ops Team and coordinate the activities of the Mission Operation Team, a diverse group of scientists, engineers and technicians. I needed a leader; fortunately for ACE, there was already a member of the Flight Ops Team who could do the job.

Not only was Jeff Volosin very good technically, but he was also respected by the other Flight Ops Team members for his honesty, responsiveness, and dedication to the ACE mission. Jeff's leadership abilities soon became evident to the other groups in the Mission Operations Team. He not only smoothed the frayed relationships between the Flight Ops Team and the other members of the Mission Operations Team, but he also found creative ways to train the Flight Ops Team.

Members of the Flight Ops Team performed software system testing for the Mission Operations Center, expanded their participation in the testing of the spacecraft, and supported the integration of the instrument test equipment into the Mission Operations Center. These activities provided the Flight Ops Team with invaluable training, while allowing them to develop excellent working relationships with the various operation support teams. In order to handle these additional responsibilities, especially the last two months before launch, the Flight Ops Team worked 10 to 12 hour days and weekends. I never heard any serious complaints about them; as for the attitude of the Flight Ops Team themselves, they saw this difficult task as a unique opportunity.

> "No longer did extensive operational experience seem the one and only prerequisite."

The greatest reflection of Jeff's character was that he did all of this and was never in fact the official Flight Ops Team lead. His management told me that Jeff didn't have the requisite experience to be a lead. Instead, they had someone else they wanted to appoint. Okay, I said, the last thing I needed was a fight--but I pushed to have Jeff made the deputy lead. In the end, as I engineered things, the official lead handled the programmatic aspects (meaning the paperwork and whatever other administrative tasks presented themselves) while Jeff was the Chief Operating Officer and handled the personnel.

At launch most of the Flight Ops Team were fresh outs, which means they were coming directly from college or some other job and had no flight operations experience. Jeff trained them to handle almost anything that could happen. They were far better equipped than any Flight Ops Team before them--at least certainly any with whom I had worked. ACE has been a very successful mission, and in no small part, this is due to the Flight Ops Team that has operated it for nearly five years.

ASK Magazine By practitioners for practitioners

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STORIES: FRANK SNOW

Two Outs, Bottom of the Ninth (cont'd)

Jeff enjoyed his work and strove for excellence in every assignment I gave him. His enthusiasm and dedication were contagious, affecting both the Flight Ops Team and the other groups that worked with him. Recognizing Jeff's leadership qualities and assigning him the Flight Ops Team lead was one of the best decisions I made during the whole project. He validated my belief that when you have only one out left, you want a leader at the plate.

Question

Do you recall a time on a project when someone with superior interpersonal skills, but not necessarily the best technical skills, was able to lead a project out of a tough situation?

Lessons:

- Objectives may remain constant--for example, a higher trained Flight Ops Team--but the way to achieve those objectives may need to change as project events dictate. Be flexible in how you approach your objectives.

- Project leaders are not just those with the most technical knowledge. Nurture project leaders who have superior interpersonal skills and can work with teammates to stabilize a project in tense circumstances. During times like these, they will prove more valuable to you than someone with superior technical knowledge.

Academy Sharing Knowledge
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ASK Magazine

SPECIAL FEATURE: MY METAPHOR

Simplify and Succeed

by Art Levine

In the early 70's the management at the American Stock Exchange wanted a set of automated displays installed on the trading floor. The purpose of the displays was to announce to the public all changes related to the trading of equities.

I had exactly three months to get the work done. Because of local building codes, I was told that the displays that met the specifications would not be available until nine months after the order was placed. This was not acceptable to the Exchange's management.

The project team was in a quandary. I called a meeting to discuss the situation and develop a report explaining why we needed more time. Jokingly, I suggested, "Why not use picket signs?" The Exchange had just gone through some painful labor negotiations. To anyone who had been involved in those negotiations, the thought of a picket sign should have sounded, I thought, like gallows humor. This was not acceptable to the Exchange's management.

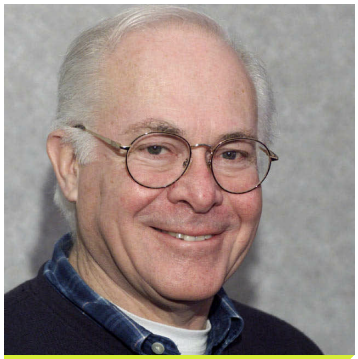
To my surprise, the rest of the project team took the idea seriously. Suddenly I realized, Hey, why not? There was agreement all around that it was worth a try. "We could print the necessary information on both sides of the signs and walk them around the floor," somebody said. We were off and running.

Within two weeks the "manual displays" were operational. The hardest part of the project was getting the signs laminated and attached to a stick. Across the top of the sign we wrote, in big letters, TRADING HALT. Across the bottom we put the reason, for example, INFLUX OF ORDERS, and just above that what the stock symbol was, the time of the halt, and the last sale. The floor of the Exchange is the size of a football field, so we had people walking around at different locations with the signs held up over their heads.

People's reaction? The first time the signs appeared a cheer went up from the trading floor. Overall, they were a fantastic success!

This crazy idea--or rather, inelegantly simple solution--solved the problem. It met the Exchange's requirements, and more importantly, for $200 it bought us the time to put in place the long-term solution, which cost $2,000,000.

Fittingly, the picket signs now appear only in the Stock Exchange museum.



ABOUT THE AUTHOR

Art Levine has been an information systems professional for more than 25 years, and has conducted Project Management, Business Requirements, Quality Assurance and Strategic Thinking Seminars at a wide variety of organizations. He is also a guest lecturer and a published writer on the subject of managing information systems projects.

Simplify and Succeed (cont'd)

"We knew that we were all out of jobs if we didn't meet the three-months requirement."

You don't have to use super-sophisticated technology to get results. Remember, what may now seem like antiquated technology was once state of the art. And it worked fine.

Question

What's your craziest idea that worked as a temporary solution to a pressing problem on a project?

Lessons

- Don't be bashful about suggesting crazy ideas. Sometimes they may just work. Share your crazy thoughts with the team.
- Don't always assume high tech is the best way to solve a problem. Smart solutions can employ low tech as well.

FEATURES

What Has He Done For Me Lately?

by W. Scott Cameron

I had a boss once who continually asked me what the purpose of my work was, who were my customers, and how was I keeping my customers informed about my team's work. At first I found these questions perplexing, as my customers should have known the answers. I had covered them in my monthly/quarterly reports or in my project meeting notes. Finally, I confronted him about his questions. He acknowledged that my customers had this information, but he was hearing some disturbing comments between when I submitted my reports, comments like, "What has he done for me lately?"

I decided to take this input to heart. My ideas about communications norms needed a major overhaul. The communication norms I was comfortable with were becoming outdated. I realized the written and verbal communications response time was suddenly being measured in days or minutes. People's perception of a project team based on monthly or quarterly meetings was no longer adequate. In the past, once the team's credibility was established it was hard to change. In a rapid-fire communications world, no news causes people to question what the team is doing to move the business/project ahead.

I decided I needed to change my "communications game" and began developing a proactive communications strategy to maintain the high credibility of the team and market their excellent work. This strategy required several components:

- Definition: we had to define our target audiences and understand what would be important to them.
- Timeliness: what are we doing for our customers today? Forget the axiom no news is good news.
- Consistency: we're in control of problems and here's what we are doing about them.
- Recognition: we showcase the project team's work while allowing hierarchy an opportunity to quickly recognize their contributions.
- Versatility: we needed to take advantage of all available communications technologies, e.g., e-mail, presentation software, face-to-face...

With these components in mind, I implemented a "Blurb" approach. What is a "Blurb"? It's a sound bite or a small piece of information explaining some excellent work someone is doing. The intent is to continually remind people the team

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W. Scott Cameron is Capital Systems Manager for the Food & Beverage Global Business Unit of Procter & Gamble. He has been managing capital projects and mentoring other capital management practitioners for the past 20 years at Procter & Gamble within its Beauty Care, Health Care, Food & Beverage, and Fabric & Home Care Businesses.

What Has He Done For Me Lately? (cont'd)

is credible and very much in control. It also serves the dual purpose of sharing information throughout various organizations so they can benefit from what one team has learned and hence not waste time trying to reinvent the wheel.

Every star visible in this image is either more highly evolved than, or in a few rare cases more massive than, our own sun. Especially obvious are the bright red giants, which are stars similar to the Sun in mass that are nearing the ends of their lives. This stellar swarm, one of the densest of the 147 known globular star clusters in the Milky Way galaxy, is located about 28,000 light years from Earth.

I soon realized marketing a "Blurb" approach would not be easy. People typically do not want to communicate their efforts until they have all the data. It would take time too before people or teams saw the benefits of this type of communi-

cations and became proactive participants. Hence, I took upon myself to market the "Blurb." It has become my personal crusade.

> "Hence, I took it upon myself to market the 'Blurb'."

In my organization, I believe the "Blurb" communication model has been a tremendous success for people who have embraced it. The proactive nature of sharing the team's successes and acknowledging their temporary setbacks has given teams solid credibility. throughout their careers. It is easy to become cynical about traditional and non-traditional rewards and recognition programs. However, as we continue to raise the bar on what we expect out of our project managers, we need to look for new and exciting ways to celebrate not only their team's successes but also their individual success.

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FEATURES

ABOUT THE AUTHOR

Terry Little is currently the head of the Air Force's Center for Acquisition Excellence. Before that he was the Program Director for the Joint Air-to-Surface Standoff Missile (JASSM). He is one of DoD's most seasoned program managers. He entered the Air Force in 1967 and served on active duty until 1975. In 1997 he was promoted to the grade of SES.

How Do We Work Together?

by Terry Little

In essence, project management is about people. Virtually every successful project is defined by good relations between the people involved. In the same way, nearly every failed or troubled project is about poor relationships between the people involved. Let's consider one type of relationship: the one between the government and the contractor.

It's easy to say that a contractor must earn the government's trust, but what does that mean in practice? Who needs to earn whose trust? What's the timeline for doing that? How does anyone know when he or she is trusted? What is the relationship supposed to be like before one feels like trust has really been established? So many questions it makes my head hurt. I have always found it better to begin a relationship assuming that everyone is trustworthy until, and unless, something occurs to belie trust.

Actions speak volumes in a government-contractor relationship. For instance, I often refer to Dave, the very first contractor program manager I ever worked with. Whenever I expressed a concern or issue to Dave his reply was always the same: "We just have to go and get that fixed." And he always did. A few times he asked me to do something, and I responded in kind. It was a great relationship.

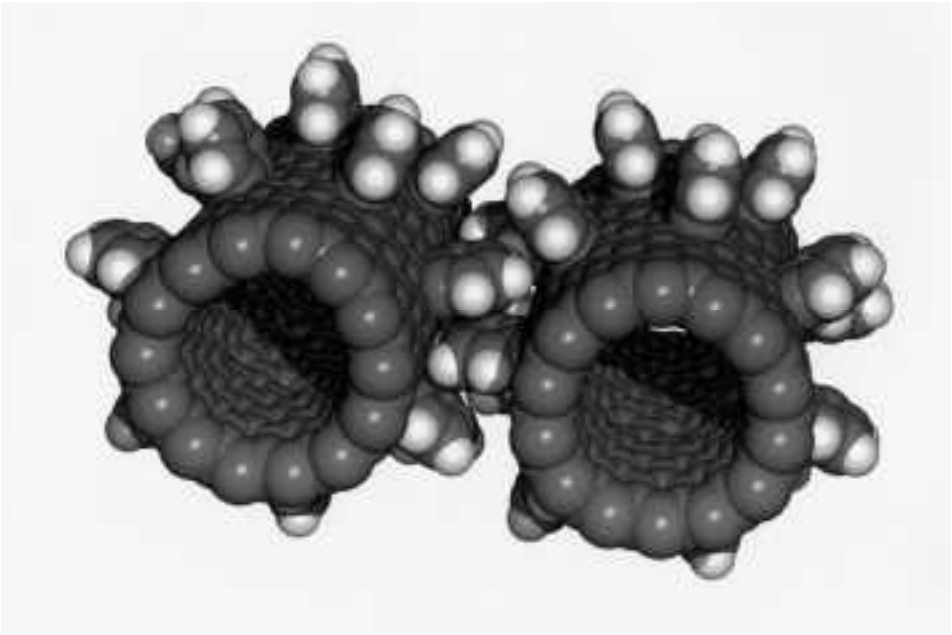
When Dave left, his replacement, Ben, was not action-oriented at all. Any issue I raised with Ben became a point of contention, and Ben's aim typically was to try to talk me out of expecting anything of him. Interestingly, Ben was not timid about insisting that I do things he wanted. For a time I did, but after awhile I got tired of his failure to act in kind. I started saying "no" even for those things I could have managed relatively easily. As you might imagine the overall relationship went south.

Complete openness and candor is an important part of a successful government-contractor relationship. I recall talking one time with Dave when he brought up that my Contracting Officer (CO) was a threat to the overall relationship. Dave told me that my CO seemed totally pre-occupied with finding evidence that the contractor was violating the contract, taking great delight in pointing out the slightest infraction, and this was causing Dave's people to begin taking a legalistic view of everything they were doing. Once I investigated and found the allegation to be true, I got rid of the CO. Had Dave and I not established an air of openness between us, I never would have known there was a problem.

How Do We Work Together? (cont'd)

The government-contractor relationship requires nurturing and attention by their respective managers. While many people believe that the contract defines the relationship, the truth is that the contract only provides the framework or the starting point for relationships among the people involved. It is the character of these relationships, not the contract, which distinguishes good projects from bad ones.

"Actions speak volumes in a government-contractor relationship."



NASA is conducting research into molecular-size devices being developed under the rubric "nanotechnology." This photograph depicts two "Nano-gears" with multiple teeth. One can imagine how precisely in synch these gears must be to run properly. Terry Little's article details another type of synchronous relationship – between two project managers.

ASK Magazine By practitioners for practitioners

Issue 9 PRACTICES

ABOUT THE AUTHOR

Frank Snow has been a member of the NASA Explorer Program at Goddard Space Flight Center since 1992. He was the Ground Manger for the Advanced Composition Explorer (ACE), the project manager for the Reuven Ramaty High Energy Solar Spectroscopic Explorer (RHESSI), launched in February, 2002, and is presently the project manager for the Galaxy Explorer (GALEX), which will launch in September, 2002. Frank began his career with NASA in 1980. He lives in Bethesda, Maryland, with his understanding wife, teenage daughter, black Labrador, and an uninvited field mouse.

The "Tried and True"

by Frank Snow

Background

There was a Chinese place near Goddard Space Flight Center where members of my Advanced Composition Explorer (ACE) team often went for lunch. The food wasn't great, but after you go to a place a few times, suddenly, you've got a history there. It's where we celebrated birthdays, project milestones; it was a good place to get away during the day when things weren't going well and folks needed to blow off steam; and it was also the place to go when we needed to let someone go on the project, to mitigate any hard feelings that might linger as a result.

I wouldn't want to give anyone the idea that project teams, even the successful ones, are "perfect families." Conflicts occur when you're dealing with engineers, scientists, technicians, and bureaucrats. We had our share on ACE. For the good of the project and everyone involved, we occasionally had to get rid of some people.

I made it a policy that when someone was leaving the project because of a personality conflict, then everyone on the team, or as many as there were around, went out for lunch as a send off. End things on a nice, friendly note. If there is some bitterness, and sometimes there is, we see if we can bury that and just go on.

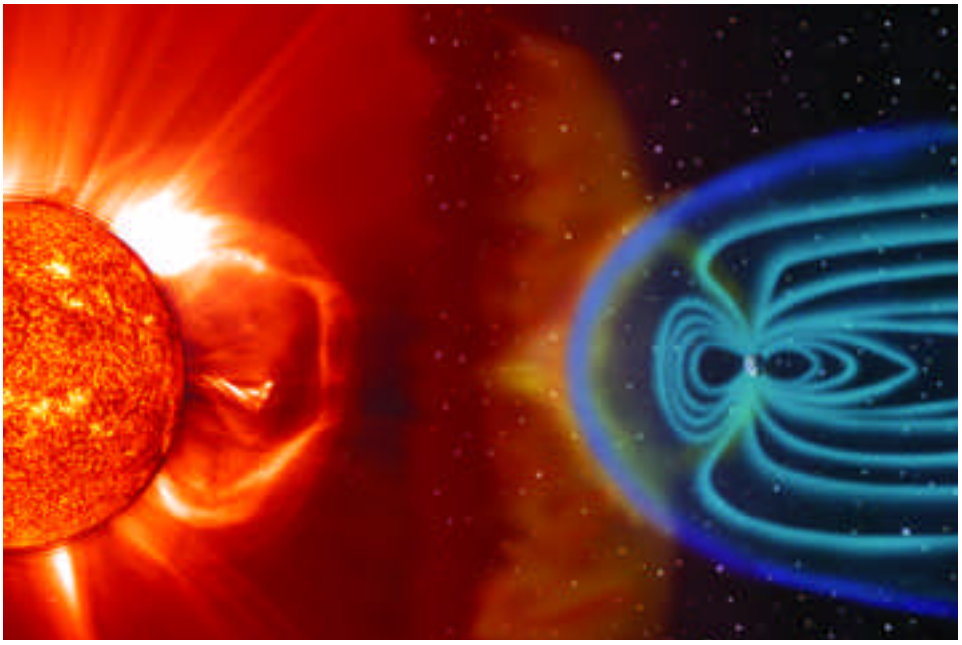
Example:

We were working on a simulation test and one of the technicians was old school right down to the way he slicked back his hair and parted it on the side. Innovation, forget it. He would have none of that. He called his methods "Tried and True." The thing is a certain degree of open-mindedness was required for this test. It got to the point where Mr. Old School and another guy working this particular test were ready to come to blows. I had to step in to resolve that. I made it clear, Tried and True though Mr. Old School's methods might be, this particular simulation required a certain degree of open mindedness.

I had already made the decision to let Mr. Old School go when I called him into my office and let him know that he was going to be reassigned to another project. The only question I had for him was where did he want to have lunch? If it was all the same to me, he said, there was no reason to break with tradition. The Chinese place it would be then.

We started off with tea and egg rolls, and by the time the Lo Mein got to the table everyone was laughing and cracking jokes. Neither Mr. Old School nor the guy he nearly got into a fight with talked about their disagreement. The rest of us

The "Tried and True" (cont'd)



This illustration depicts a massive solar explosion, known as a coronal mass ejection, blasting through the sun's outer atmosphere and plowing towards Earth at speeds of thousands of miles per second.

made sure to stay away from that subject too. Even though Mr. Old School and his counterpart couldn't agree on work, they did agree on something. It turned out they both had teenage daughters who were driving them crazy. They might not have anything else in common, but they did have this. In some ways, this is the kind of thing that can take the edge off their other differences. I could just hear them when they met each other again, say in the cafeteria. "Hey, did that little girl of yours get her driver's license?" "Yeah and she's still driving me crazy, but how about you?"

And this is the whole point of why we had our Chinese restaurant. It rounded out the people on the project. The best way to smooth out differences between team members about work is to round people out. When someone has to leave the project, simple social occasions like doing lunch goes a long way towards healing some of the hard feelings.

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INTERVIEW

ASK Talks With Judy Stokley

In the summer of 1997, Judy Stokley took over as Program Director of the Air-to-Air Joint System Project Office (JSPO) at Eglin Air Force Base in Florida. As the JSPO Program Director, she directed much of her attention to reforming the Advanced Medium Range Air to Air Missile (AMRAAM) program, which had been operational since 1991 and was presently being produced for the Air Force, Navy, Marine Corps, and many international customers. Upon careful analysis of the program, she found it rife with problems. Two of the most pressing included a bloated Average Unit Procurement Cost and an Air Force mandated draw down plan that had not been met. In this interview, following her presentation at the Fourth NASA Masters Forum of Program and Project Managers in Dallas last February, Stokley discusses some of the difficulties she experienced in carrying out the AMRAAM reforms.

Stokley is presently Air Force Program Executive Officer for Weapons in Washington, D.C. She is responsible for the cost, schedule, and technical performance of a portfolio of air-to-air and air-to-ground weapons programs. These programs represent the leading edge of weapons technology, including developing the next generation of precision-guided munitions -- "smart" bombs -- and air superiority missiles.

ASK: What was the most difficult thing for you about reforming the AMRAAM program?

Stokley: Drawing down the workforce. I've always done everything that the Air Force has asked me to do, and if they asked me to do a massive downsizing again, I know I would have to do it; but I pray to God, literally, they will find somebody else. I've done this once, and I don't ever want to do it again. To stand in front of two hundred people and tell them that we are going to be down to less than a hundred in one fiscal year, that was really excruciating. A lot of them had been on the program for the full twenty years it was in existence. Many felt that their jobs were a reward for having made this program a success and thought they were going to stay there until they retired.

ASK: How much of a surprise to them was it when you told them this?

Stokley: There was an Air Force mandate to draw down the workforce--so everyone knew about it--but they didn't know what the plan was. The organization was about one year behind the mandated plan, for a lot of reasons. My predeces-

sors had not embraced the drawdown and other parts of acquisition reform. So there was a perception going in that maybe the organization would be able to "escape" compliance with the drawdown directive and other aspects of acquisition reform, and that somehow it didn't really apply to them.

ASK: Did that make it even harder to stand up there in front of them and say what you had to do?

Stokley: Oh yes. I was in this environment where, one, people were sitting there very nervous about their jobs and, two, they believed their work was special somehow and would be left alone, if only I would argue for them as well as my predecessors had. I feared that I would be remembered as the slasher. Ultimately, I believe this fear drove me to be a better leader, because I focused on nurturing the people and the business in the organization.

ASK: How did that feel to be seen as a 'slasher'?

Stokley: That was very strange, I have to tell you. For at least a year or two, I would see people whispering when I walked up, especially people on the base outside my immediate organization. It was the first time in my life that I experienced a feeling of being disliked and gossiped about. But then slowly people got over it, once we got through that first phase, and in fact when the program became recognized as quite a success and won major awards and was featured in the newspaper, then a lot of the base and the community started joining in our joy, taking credit for it.

ASK: One year seems like a drastic amount of time to draw down your workforce by more than half. What made you decide to do it so quickly?

Stokley: I thought about this a lot and I felt that if you are going to draw down the workforce, you ought to decide how much you're going to draw it down and you ought to do it as quickly as possible. You can do it slowly, but that seems to me like leaving yourself in a state of constant bleeding. My view was to do the amputation and let's get well. Plus, I did not intend to just 'pink slip' people and say goodbye, good luck, and get out of here. We were going to be systematic about finding them work, both the civil servants and the support contractors.

ASK: Did telling them this make a difference?

ASK Talks With Judy Stokley (cont'd)

Stokley: That was not something they took to heart right away. Until you see it happening around you it is hard to fathom.

ASK: What were their reactions when you announced the drawn down plan?

Stokley: It was very shocking. The room went silent. I invited them to ask questions, and there weren't any. I had a friend who was in the program office at the time and I felt that she would be candid with me, so afterwards I asked her, "How do you think it went over and what was the gossip afterwards?" She said--and I knew for her to phrase it like this that it must have been really bad-- "Well Judy, everybody knows you did the best you could, and at least you were honest with us."

> "I focused on nurturing the people and the business in the organization."

ASK: As the year went by, while the draw down was taking place, did you have any strategy for letting people communicate their concerns?

Stokley: We had a team meeting every month, and we discussed where we were in the process. At every meeting, beginning with the first one where I announced the plan, people got a note card and could write anything they wanted. They could vent, they could give us recommendations--whatever. We took every recommendation that was printable, and at each team meeting we would get up and tell people what we had done. That allowed people to feel like they could really scream at us if they wanted.

ASK: What kind of things did people write?

Stokley: Some people wrote down things like, "I feel very betrayed." "Please don't leave me without an job, I am the only one earning to support my family." Other people wrote down things that were real petty like, "I've asked for the Xerox machine on our floor to be fixed over and over and it never works reliably." And then other people would write really good recommendations. We implemented every recommendation, including getting the damn Xerox machine fixed.

ASK: What happened to the 100+ people whose positions were eliminated?

Stokley: This is something I'm very proud of. Almost all of the people who left the AMRAAM program, I would say 95%, got jobs in other programs. I had told them this at the first meeting, we were going to get them jobs, nobody was abandoning them, but like I said, until you see it happening around you it is hard to

fathom. For government employees, there was plenty of work on the base. We had a handful of civil servants and support contractors who never got happy, they didn't want to go work in another program, but they were older people who eventually decided to retire.

An F-16C Fighting Falcon from the 416th Flight Test Squadron, Edwards Air Force Base, California, launches an advanced medium-range air-to-air missile (AMRAAM) over a Navy test range.

ASK: What was the impact of the reforms on the rest of the base?

Stokley: Huge. AMRAAM was the largest program on the base, so the changes were going to be enormous. The program had grown up in an environment where many parts of the base received lots of money every year, like in the test wing, and they saw that as their right to the money.

ASK Talks With Judy Stokley (cont'd)

ASK: How did you explain this to these stakeholders?

Stokley: There were compelling reasons why we needed to reform. Basically, 50% of the unit cost of AMRAAM wasn't going into the missile.

ASK: Where was all the money going?

Stokley: There was a huge amount of redundancy and waste. For example, we had five different simulations checking the performance of the missile. All five were duplicating each other. At Eglin we had two, neither of which I could see the point of carrying. One was with the program from the beginning. The second was this brand new facility that was supposed to be the best in the world and all that. AMRAAM was the primary contributor. We pumped more money into that facility than I could believe. I didn't see why we needed so many simulations. The contractor of course had to have his; he had to have some way of verifying his performance; but these others were just wasting a lot of money to duplicate data.

> "I had the support of my bosses in Washington, who told them point blank, 'I pay my program directors to execute efficient and effective programs. I do not pay them to shore up work forces or facilities at the product centers."

ASK: How did people who were involved in the areas react to you?

Stokley: Well, many people were angry with me. There were mean e-mails that were forwarded to me, and some officials complained to my bosses in Washington. I had the support of my bosses in Washington, who told them point blank, "I pay my program directors to execute efficient and effective programs. I do not pay them to shore up work forces or facilities at the product centers."

ASK: Still, it must have been difficult dealing with hostilities like that.

Stokley: Whenever you are doing something really different, really innovative and creative, and you are out there trying to create something more powerful than your predecessors, you are going to have attackers. There are going to be people who don't agree with you. People will feel threatened by you. If they fundamentally don't believe in changing the way they do things, you can't convince them to like changing. You can only hope they will leave you alone until they can see that the change is working.

ASK: I imagine you had to brief the Base Commander often on what you were doing. How did that go?

INTERVIEW

ASK Talks With Judy Stokley (cont'd)

Stokley: One thing I learned about myself is that I am not a quitter. I briefed him once and the tension in the room was thick enough to slice with a dull knife. He was quite aggressive in his criticisms. I was courteous and replied over and over, "Noted sir, next chart." At the end, I said, "Thank you very much for your attention today and all the time you have given me. I am the Program Director and I will proceed as planned with this program. Thank you very much." Through all of this I was just extremely courteous. I always tell people that these are very powerful things to say, "Thank you very much, I have noted all of your concerns. This is the way I am dealing with them, this is the way we're going." You can beat down a whole lot of bureaucracy by doing that.

> "It is never easy to sit calmly and not become argumentative when you are being attacked."

ASK: Did that come naturally, or did you have to swallow hard to say those things?

Stokley: It is never easy to sit calmly and not become argumentative when you are being attacked. I practiced a lot in front of a mirror. But seriously, it is a difficult thing to do for most of us, but if you can't do it you will sooner or later become stunted as a leader.

ASK: I know you are often invited to speak about leadership. What do you regard as the key ingredients of a leader?

Stokley: It seems to me that people are leaders when they have a compelling vision that is really part of their heart and soul. They really believe it. And it comes out of them kind of like poems come from the great poets. It's part of their soul, and it's part of how they think about the world. When that vision comes forward, they haven't had a committee get together and write them a vision statement on a plastic card--it is part of their core being, and you can just tell. And when you work for someone like that, you know her vision is who she is. Every now and then in our lives, we have gotten to work with someone like that. And we say, "Oh my God, this time will not come again," because we know where we are headed and we know what the vision is, and we know it's got to be a good vision or else this person would not believe in it and love it the way she does. So that is what I think leadership starts with: a person who has a vision that is the core of her soul and beliefs.

Letters

We received the following letter from one of our contributors to ASK 8:

Of the three lessons I submitted with the manuscript of my story "Boiling Point," published in *ASK* Issue 8, only the first, a quote taken from a widely-circulated briefing on leadership by General Colin Powell, was published. In the edited version of my manuscript that appeared in Issue 8, the reference identifying General Powell as the author of the quoted lesson was deleted. I would like to set the record straight lest anyone who is familiar with General Powell's briefing think that I have tried to pass off his wisdom as my own. If ASK is to maintain its initial high marks as a useful tool for disseminating leadership experience and sparking meaningful discussions among practitioners, it must be careful to neither misrepresent the viewpoints of its practitioner-contributors, nor be negligent about attributing quotes to their true sources.

Sincerely,

Michael C. Jansen
NASA Johnson Space Center

.....

ASK apologizes to Mr. Jansen and to our readers for not citing General Powell as the author of the briefing. Mr. Jansen's original lessons are the following:

* Colin Powell's "Lesson 3" from his 18-lesson leadership briefing says it well: "Don't be buffaloed by experts and elites. Experts often possess more data than judgment. Elites can become so inbred that they produce hemophiliacs who bleed to death as soon as they are nicked by the real world." Amen.
* Rare indeed are the instances when there truly is no solution for a given problem. Be obstinate in your search for one.
* Whether you're a fresh-out or a seasoned engineer having to deal with a situation outside of your experience-base, have the confidence--born of the knowledge that you had to have done many things right to get where you are--to trust your own judgment, even when it conflicts with expert opinion. Especially when that opinion is a blind "it can't be done."

We encourage everyone to reread the story with these lessons in mind. You can find Mr. Jansen's story, and any other story from our back issues, in the ASK Archives.

Letters (cont'd)

We also wanted to share another letter from one of our readers. This one fits nicely with the remarks above. There is a wealth of material in the Archives. If you haven't been reading ASK since Issue 1, you probably don't realize how much great material there is in our back pages:

I'm not a NASA employee, but I was helping my husband track down articles on NASA for his management class. He was analyzing the management and control processes, and I just loved the article we found in a back issue of ASK by Steven Gonzalez, It's All About Passion. The review my husband wrote received a top score, and his instructor said it was the best article review assignment she'd ever read. I think it was mostly because the topic is so inspirational.

Mr. Gonzalez' advice on proactively searching out sources of passion in our lives has carried over into everything I do. The article was one of those rare finds that really impacts a life, and my new passion for finding passion is beginning to "contaminate" those around me. My husband is motivated to begin his quest to find passion and enrich his life. I'm a Sunday School teacher, and my students are beginning to catch on to the concept and to look for what moves them to action.

Thank you for a great article and philosophy,

Emma Powell
Austin, Texas

Review Board

John Brunson (MSFC)
John Brunson is currently assigned to the Systems Management Office with the Marshall Space Flight Center. His career in the space industry began in 1980 as a technician working on the first Space Station.

Dr. Michelle Collins
Dr. Michelle Collins works in the Spaceport Engineering & Technology Research Group at Kennedy Space Center. She has over 20 years' experience in Aerospace spanning Engineering, R&D, and Project Management. She is on the Florida Tech Engineering Accreditation Board, the National Fire Protection Association's Technical Committee for Halon Alternatives, and the United Nations Environmental Programme Halon Technical Options Committee.

Hector Delgado (KSC)
Hector Delgado is Division Chief of Process Tools and Techniques in the Safety, Health and Independent Assessment Directorate at Kennedy Space Center. He has received many honors and awards including the NASA Exceptional Service medal, the Silver Snoopy Award and various Achievement Awards

Review Board (cont'd)

Dr. Michael Hecht (JPL)

Michael Hecht has been a member of the Jet Propulsion Laboratory staff since 1982. He is currently Project Manager and a co-investigator for the Mars Environmental Compatibility Assessment project. He received his Ph.D from Stanford University in 1982 and holds 7 patents, 24 NASA Tech briefs, and has published extensively in both surface science and planetary science literature.

Jody Zall Kusek (World Bank)

Jody Hall Kusek is a Senior Evaluation Officer at the World Bank. She is currently involved in supporting the efforts of seven governments to move to a focus of performance-based management. She has spent many years in the area of public sector reform, serving the Vice President of the United States, the U.S. Secretary of the Interior and the U.S. Secretary of Energy in the areas of Strategic Planning and Performance Management

Don Margolies (GSFC)

Don Margolies is Project Manager for the Full-Sky Astrometric Mapping Explorer (FAME), and Observatory Manager for the Microwave Anisotrophy Probe Mission (MAP). Previously, he was Project manager for the Advanced Composition Explorer (ACE) mission, launched in 1997.

Review Board (cont'd)

Dr. Gerald Mulenburg

Dr. Gerald Mulenburg is Manager of the Aeronautics and Spaceflight Hardware Development Division at the NASA Ames Research Center in California. He has project management experience in airborne, spaceflight, and ground research projects with the Air Force, industry, and NASA. He has also served as Executive Director of the California Math Science Task Force, and as Assistant Director of the Lawrence Hall of Science.

Joan Salute (ARC)

Joan Salute is the Associate Director of Aerospace at Ames Research Center. She has managed many NASA projects including those involving flight testing of thermal protection materials, commercial technology, commercial applications of remote sensing, and remote sensing science projects.

Harvey Schabes

Harvey Schabes is currently assigned to the Systems Management Office at the Glenn Research Center. He started his career with NASA in Icing Research, and since then has served in numerous organizations which support the Space Station Program.

Review Board (cont'd)

Charlie Stegemoeller (JSC)

Charlie Stegemoeller is currently Manager for Human Space Life Sciences Programs Office at Johnson Space Center, responsible for the organization and direction of the Human Exploration and Development in Space Enterprise Lead Center programs for Biomedical Research and Countermeasure, Advanced Human Support Technology, and the Space Medicine crosscutting function.

Hugh Woodward (PMI)

Hugh Woodward served as the Chairman of the Project Management Institute (PMI) for consecutive terms in 2000 and 2001. He was elected to the Board of Directors in 1996, and before being elected as the Chair, served terms as Vice Chair and in several other key leadership roles. He is a Program Manager for Global Business Services with the Procter & Gamble Company.

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