

NASA Executive Leadership Behavior Panel Discussion
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(Edited for clarity.)

Christine Williams: Thank you for coming to our session. My name is Chris Williams. I was lucky enough to be one of the people who conducted the executive behavior studies and this information is in a lot more detail on the web and we can give you the website address for that as well. We were very grateful that we were able to get to some of our executives in the agency to spend some of their valuable time to help us understand really what do they on the behavioral sense. We talk a lot about skills, we talk a lot about things like leadership, communication, but really what do those things look like when they are working effectively in the agency? So if you say to someone, well, you need to communicate more. Does that you mean you need to send out more emails? Is that what works? We all think that's what works.

What we wanted to do with this study is get down to the actual behavioral level. We have generic terms like leadership, communication, systems thinking, but what does that really look like? What does the person actually do in the room with others that either enables or inhibits the effectiveness of both the individuals and the organization? So you know all of these folks up here. I don't really need to do an introduction, but I am just going to do a little bit just for some context setting. If you don't know more about their background, you can have a little bit of that and that will inform some of the questions that we are asking.

Chris Scolese is the NASA Associate Administrator. Prior to that, he served as our acting Administrator. Chris has held a number of leadership positions in government and industry. At Headquarters he served as the NASA chief engineer and also has the deputy associate administrator in the Office of Space Science. At Goddard, his last position was that of deputy center director. Chris has received many awards in his career including the Presidential Rank Award for Meritorious Executive, the NASA Distinguished Service Medal, Outstanding Leadership Medals, and he is also a fellow of the American Institute of Aeronautics and Astronautics.

Bill Gerstenmaier has been associate administrator for Space Operations for NASA since 2005. Prior to that time, Bill served in a number of positions at JSC, the last one being the program manager of the International Space Station. He has been awarded the *Aviation Week and Space Technology* Laureate Award for Outstanding Achievement in the field of space, a senior NASA Outstanding Leadership Medal, the Presidential Rank Award for Meritorious Executive, and he is also a fellow of the American Institute of Aeronautics and Astronautics.

Stephen Jurczyk is the Langley Deputy Center Director. Prior to his appointment, he served has the Director of the Research and Technology Directorate and also served as the Electronic Systems Branch head, deputy director for flight systems, and director for systems engineering competency at Langley. During a detail at Headquarters, he also managed the Tropical Rainfall Measuring Mission and while at Goddard, he was spacecraft systems manager for the Landsat 7 project.

Dennis Andrucyk served has director of the Applied Engineering and Technology Directorate (AETD) at Goddard and he also served has the deputy director for that organization. He served has chief software engineer, chief of mission engineering and system analysis, chief technologist, and electrical engineering associate chief. Dennis earned a number of awards including the SES Meritorious Presidential Rank Award and NASA medals for outstanding leadership and exceptional service.

So part of the questions that I am going to be asking today were actually based on some of the observations and the insights that we gained from these individuals. We looked to cross the behavioral model and really looked at when we had interviewed each one of these individuals, except Dennis is sitting in for a center director, but he has a lot of good information he can give us on this. Try to target some of the areas that we thought were particularly unique to these individuals and they all know they can just chime in on any of these questions.

So Bill, I would like to start with you. At the executive level, decisions become very complex. How do you identify and sort through all of the competing factors and balance the short and long term needs of the agency to come to the right decision?

Bill Gerstenmaier: That is a great question. I think the first thing I try to do, or we all try to do is we try to parse the problem into smaller pieces and we understand or try to understand which decisions need to be made when, from a time order kind of standpoint. Then you at least you've got the immediate decisions you need to make first or you can find some of the decisions that are later that need to be made. I think the strategy is, you take a pretty complex system that is integrated together and then you figure out a way to break it down. In my experience has been, it is probably more important to know when certain decisions need to be made as much as to actually making the decision itself. For example, when we had the *Columbia* tragedy, we were in a very tough state with space station. We had to keep the crew on orbit and we weren't sure we could really do that. We had no idea when the shuttle would come back to flight again so we essentially had to build a framework with an infinite horizon. So it was to determine which vehicle was going to launch next, what cargo could go on that vehicle, what couldn't go on that vehicle? So it was really the framework or the template of the decisions that we laid out in front of us that gave us a way to manage through that activity and that process. I think that is similar to programs and projects today. Even though you like to think you have uncertainty and you're going to get a fixed budget, you're going to get a fixed schedule. My experience has been is you don't typically get that so you now got to figure out a framework that is not tied to any of those fixed things, but is much more adaptive and agile and able to change as circumstances change.

Christine Williams: Chris I remember from the interview I did with you, you actually said something about knowing when not to make a decision. Can you talk a little bit about that?

Chris Scolese: Yeah, that doesn't mean you don't make decisions. Although, it is an interesting way to look at it. I think when we were talking, one of the things that I try to mention is people have responsibilities and when it comes to my level or Bill's level or Dennis' or Steve's, you know, it should be something that is at a level that requires that kind of an assessment so, you know, many times its let people go off and do their jobs. What I've seen a lot of, particularly with newer managers or newer leaders, they want to make all the decisions and that's not good for you because you don't know everything. The person that is doing the work knows more than you do. It is your job to help guide them to those decisions and sometimes a decision just doesn't need to be made. You know that there is time to go off and work it. Those are very rare circumstances, but that does occur. Really what I think I was trying to get at, you have to let people do their jobs and you have to pick people that you count on and you trust and you get to demonstrate that you count on them and trust them and help them to do the right things.

Christine Williams: Chris this question is also for you. During the study, you mentioned that at the technical level you worried about the technical interfaces, how things interact. At the executive level, you worry about the people interfaces. How do you make everybody work together? What is the most important thing that you specifically do to enable people interfaces?

Chris Scolese: Today?

Christine Williams: Yes.

Chris Scolese: I try and stay out of the way (laughter). What I was trying to get at when we mentioned that, when your early to mid-career your job is to deliver something, whether it is a piece of hardware or a piece of software or your operating at a console and you have go off and do operations and your concerns are making your piece work and making your piece work with all the other pieces that it is supposed to interface with. So your focus tends to be very technical, very reasonably controlled. As you move up to certain levels, it is now putting teams together so they can go off and work and do what needs to be done to make whatever it is, to make a shuttle fly, to get Glory off the ground, or to build, to do the hypersonic research that goes on. So you're working on trying to get the team to work and putting the right kind of team together, giving them the resources that they need to be successful. And going back to what Bill said, it is giving the guidance to say exactly what was said: What is the horizon is going to look like if you're going to last? If your project or activity is supposed to go over ten years, you know, that is infinite as far as budgets are concerned. You're going to have ten different budgets so stability is not something that you're going to be able to go off and look at. You're going to have to be resilient to changes and you need to think about those changes and it's our job to encourage people and to show them how to deal with those changes and to provide an environment where they can do that effectively. So that's where it comes from managing the teams and putting them together and understanding who the people are so they can interact properly and understand the organizations. It is very different, within a NASA center you pretty much know how to work. Between NASA and a contractor or an international partner, it is a little bit different. You have to build those relationships from the top down and the bottom up at the same time. You know probably the hardest place is to work probably within a center between divisions, I've always found. Probably the same within a company because everyone knows what everybody else is doing and sometimes those are the hardest things to manage. But that was really what I was trying to get at with that comment.

Christine Williams: Dennis, the next question is for you. The attribute that we identified in successful executives was the ability to stay open-minded when being presented with new approaches and strategies. What do you do to enable creativity and innovation in your employees?

Dennis Andrucyk: Sure. Creativity and innovation is another way of saying change and, as engineers, they typically don't like change. They like to get their requirements and work within the box to get a product delivered, but in my entire career it's been my experience that the only thing that's constant in life is that things change. So innovation and creativity is a very important factor and when you think about innovation, it's not just formulating a project. It's also in building a product or a piece of hardware, whatever it happens to be or in operations. We've seen problems occur in every phase of a mission in innovation and creativity is essential in meeting our ultimate mission goals. For me personally, and to get back to your question, to foster creativity and innovation it's important to set up a culture where it's safe to bring up new ideas, where it's safe to express new concepts, new ideas such that they can be ultimately executed. Doesn't mean the new idea or new innovation has to have every "i" dotted or every "t" crossed on day one because that's not the case. Usually it takes a new idea, a spark of a new idea to be fleshed out by a team or an organization before it can actually be implemented. So that open environment - that free organizational construct is very important to making sure new ideas are accepted and worked. As a leader it's important that when you start to communicate change or new ideas, innovations to the masses, it's important, and your hearing some of this from some of the sessions you have been in already yesterday and today, the leaders have to get up and communicate what the change needs to be. And it's not enough just to say "Innovation, we're going to go off and do X." You have to give kind of give some idea on how you're going to get there. Chris just mentioned, it's got to be a possible or at least probable

task. If you're setting up your team for an impossible task, an innovation that is just not possible, you're not going many people following you. So you have to have a credible path and also provide the resources you need to get there from here. That is money, that's people, that's facilities, that's all the above. You have to support them. Couple of final comments I'll throw out would be when you're actually implementing a new innovative concept, idea, thought, you will build a plan, you will sell it to your stake holders and start to implement the plan, but it is important for leaders to act to support the teams that are doing the implementation. You can't at the first problem or first issue cut and run to a backup solution, which by the way you should always have. You should try and work through the innovative techniques in order to try and improve them whether it's new technology that is going to enable missions in human flight or in robotics or some other idea in ground systems. You have to make sure you support the people and work through issues as they arise. When you are that leader who inspires, but at least walks the talk and saying you are open to ideas and creativity, then people will bring you even more ideas. So when you talk about the culture that is what I found to be very effective. One last comment I'll throw out there is just having innovation and creativity thrown at you, it's a great thing, it can be very successful, but you have to work with your stakeholders to make sure you manage risk along the way. If you don't have a plan, you're not going to get there. You have to make sure you have technology, if its technology, a technology rollout plan with definite milestones for implementing those rollouts. Innovation and creativity are great things if they are managed correctly, if you create the culture that makes it safe I think that is a great way to make sure the whole organization is behind you and there are new ideas.

Christine Williams: Part of what I'm hearing and what you are saying too, you have to make it very explicit on what your intention is as far as letting people know that innovation is fine and you are looking for it and then it sounds like not just once, but many times. Did anybody else want to say anything about it?

Stephen Jurczyk: In this environment to be able to put out new ideas and not be shot down, right, cause it's so easy to shoot down ideas, it's really important in this environment to be able to throw out a bunch of ideas and be able to fail and have a large percentage of them not work is also important. It takes many, many ideas or many many incarnations of an idea to actually hit a home run or actually become an innovation. So you have to have an environment where having an idea that you execute the plan to flesh that idea out properly, but it kind of just didn't pan out, that's got to be OK.

Christine Williams: Steve this next question is for you. At some point in your career you made the decision to give up being a technical expert. How did you let go of that goal and what do you do to empower your technical leaders and assure that you're not getting in their way and doing their job?

Stephen Jurczyk: So I'm not sure I would ever be considered a technical expert, but for argument sake let's say I was. What I have had to do is let go of attempting to be the smartest person in the room. Because that's what the expert is: twenty, thirty years of their career they have become internationally recognized expert in their field and they are the person, like Chris said, that you want to go to, you know, as a sub to solve a problem or as a component of solving a problem. So I kind of had to give that up because, and I'll talk about this later, when you become a senior leader multidispliniary problems take on a whole new meaning. Just the stuff you're not going to know about when you come across a problem. I kind of get my technical fix, my engineering fix by reviewing projects. So SRV chair for an Earth Science Mission, I am on the MSL board and just reviewing projects within the center and trying to help them out both engineering-wise and project management-wise. That is how I kind of get my fix, right, is to help other people be successful so that keeps me sane because I am in a lots of mind-numbing budget meetings (laughter). I hope my boss isn't in this room. So you have to make the shift, it's not about your personal success necessarily or your personal contributions, it's about the team's contributions and building the team. I've had the fortune on being on several high performing teams in my career.

Sometimes if you're on one, its gold and one of those was the Landsat 7 project. One of the guys that was supposed to be here, Obenschain, Rick Obenschain, was the project manager and then actually later on it was Phil Sablehaus. I just learned a tremendous amount on that project about how to build teams and about how to rely on people to be successful. So obviously, the great thing about project versus managing a center - the nice thing about a project is you have a well-defined goal and that is really important, well defined goal that everybody can understand and get behind and understand their role and making that goal happen. Clearly defined roles; everybody understands their role on the team and delegating just doesn't mean telling someone to go do it and walking away. It means checking in and helping them. I just thought delegating meant go away and it will happen. Well, that doesn't work. Checking in with them and helping them is important. Also checking in with them so they know it's important to you that this thing gets done. That's critical. I had some awesome mentors on that team, just from Rick and Phil on down I could name folks on that team who have gone on to decision chief positions and senior positions at Goddard. Mentoring is really critical and then celebrating your success is also important. So just a few things. I think we celebrated of our successes there and that's important to keep the momentum going. So that's just a few things on kind of building a team and making a team successful. Also, we've kind of rediscovered the parody, the power of including folks and leveraging diverse people and ideas. So kind of the buzz word is now "inclusion" and I am in the process of listening to a book in a car on the way to work called, *Wisdom of Crowds*. And it's a good [book] for an engineer understanding the power, diversity and inclusion because he goes over data where they will take a problem and have the world's expert at their problem give the answer and a crowd of people who are really not experts give the answers and the crowd always does better than the expert no matter what the background is. Now having said that, there's a thing called groupthink and the crowd can come up with a really crappy answer as opposed to the expert. If you don't let people be heard, if you let the expert take over the conversation and these guys are great at it, Chris and Dennis and Gerst are great at letting people be heard and drawing the ideas out of people and then aggregating that information and then using it to making a decision. So I think that's really important like I said that book that kind of supports it with data. I'm going to echo something I think Chris said, trusting the people is critical. If you don't have trust, it will fall apart and respecting each other is critical too. And then, you know, I have just learned about in the end it's not about being right, it's about understanding how to make you group or team successful and leading them to the goal you are trying to achieve.

Christine Williams: Thanks Steve. I'm curious from the other folks on the panel, was there an "ah-hah" moment when you decided to give up being the technical expert or was it sort of a natural progression that you just found yourself with the next role and realized you were doing less of that.

Chris Scolese: I think once my arm was broken, I agreed. I'm not sure about everybody else, but I kind of really thought hard about whether I really wanted to do that when I was asked and I actually talked to some people and I would actually give some advice: before you say, 'No,' you know really, take some time to think about it. I don't mean months. I mean hours or maybe a day, or at worst a weekend, and try to decide if may be worth trying your hand at it before you say, 'No.' That's about what I did. I spent about a weekend when they first asked me and thought about it and said, well, I really like what I was doing, I mean I was GNC person working that stuff and computer control stuff and when they asked me to go off and be a, at that time it was called a systems manager at Goddard, where you had a little more management responsibility. I really thought about it a lot that weekend and said it's worth trying and all I can say is I ended up here. I'm not sure if that is good or not, but it did lead to a different place then I was thinking at the time.

Dennis Andrucyk: I'll add to that. I'm not sure exactly when the event came that I realized I was giving up the technical work because I have always deluded myself thinking I was still a techy, but in reality if I

looked at where my skills are I think I have just enough technical skills I could play an engineer on TV. What's the Holiday Inn Express [saying]? "I can do anything if I stay there." (laughter) But the reality is if you surround yourself with really smart people, they can actually fill you in on enough of the technical information that you need to help make decisions, be they technical, be they policy, be they direction for your organization. I have been very fortunate to be surrounded many technical people and some of them are in this room here. That is not just people who report directly to me, it's the whole of Goddard, project managers, program managers. It's getting the knowledge you need from across the organization. So when I saw that was an available resource to me, giving up the technical day-to-day job was actually pretty easy because I had the chance to work with a broader scope of people doing different things and I felt very comfortable with that.

Bill Gerstenmaier: And I would just add it's been really hard, it's still hard to give up the technical side. I am a recovering engineer. (Laughter.) But I recognize you just can't do that stuff anymore and to think you still have those skills is also really wrong. I will give you my personal story. I went back to work on my PhD and I thought I was still pretty hotshot in an engineer when I went back to work on my PhD and I was humbled beyond belief when I went back into the academic environment and realized how much I didn't really know and how my math skills had degraded overtime. I was kind of re-grounded that I didn't know a lot of stuff and kind of just assumed that I did. So that was a very good experience for me to recognize that those skills are really not there. So then you got to find something else that gets you excited, gets you motivated like Steve talked about. I think the thing that gets me excited is I can now craft or formulate a problem for a team to go work on and this team can rise to the occasion and then accomplish this problem then have unbelievable success. My joy comes from watching the teams really rise to problems that I think are impossible. One of the examples would be when we had the external tank out on the launch pad and got hit by 6,000 pieces of hail and there were 6,000 dings all over the tank. And I went out and looked at the tank and I looked at the tank and said, there is no way we are ever going to be able to fly this tank. Three of the technicians and two engineers came up to me and said, "We think we can fix it. It will be ready in about a month." I'm going, "Yeah, sure." But I believed what they said and powered them to go do it, you know Mike Griffin would come down to my office every day and tell me, "When are you going to scrap that tank and get on with the next tank?" I would just keep telling him my team is working on it, just don't worry about it and life was OK. They really rose to the occasion, the Lockheed team and the USA team, they came together and probably the most amazing thing the process I've ever seen. They took a program that was used to track tile numbers on the bottom of the shuttle and they mapped that now into dings on the tank so they could keep track of which ones they were actually repairing so they knew which days they were doing. They figured out a way to email work orders back and forth to each other. USA guys would perform against Lockheed paper. USA QC would sign off and send it back to Lockheed. Lockheed's guys would then approve it and then move forward. So when I saw the team come together, that was really an amazing thing to watch that team. So my joy comes now not from me doing it, but from watching others get to go do really cool things and that's the best thing I can do is to find new exciting challenging things for you guys to go do and then step back and just watch you run and just enjoy what you're doing.

Stephen Jurczyk: My first job right out of college was redesigning analysis project while processing electronics for remote sensing instrument. My lab had to be across the hallway from my branch chief. My branch chief saw how I was able to drag people into my lab and work with them to help solve problems that I was having. I was able to lead little teams and he witnessed it firsthand across being the hallway and from that day on, they had me pegged as a manager/leader. Then a little arm twist thing and off I went.

Christine Williams: Thank you. Chris this next question is for you, some executives tell me that they try to shield their people from things that are going on that might distract them from their day-to-day work. Others say that it's better that my employees know about the things that are going on above their level so that they are keeping the big picture in mind. Can you say what you do and why?

Chris Scolese: One of the most important things that we need to do in our job is we have to remember that what we're doing doesn't make any difference really what it is. We're doing it for the first time. Bill will tell you every shuttle mission is different than the one that preceded it. The one that you are doing now is going to be different the one that is going to follow it. There is a whole bunch of different missions. Most of the satellites that we do are very different. So for us, it's critically important that we communicate. I think at any project that you go look at it, it's critically important that you communicate because the team has to understand what is going on and they have to understand the environment that is going on. You have to understand the environment that is going on. Communication is up, down, sideways, diagonally, you name it. If you're the leader of the team or of the teams, you have to be aware of many things that are going on. You have to be able to convince - Bill gave a really good example, we all remember dealing with, you know, Mike Griffin and others when he would ask pretty hard questions and sometimes you have to say, "I trust the team, they know what they're doing, go away." It wasn't always easy to get the go away part, but you know it would tend to work.

Bill Gerstenmaier: Temporarily.

Chris Scolese: Temporarily. But you had to be able to have that dialogue to be able to communicate upwards about what you're doing. At the same time you need to be able to communicate to the team the environment that they're in, in a way that makes sense. Not everybody knows how Washington works. I don't know how Washington works, I'm still trying to figure it out. But, you know, when a project or activity is big enough to be noticed, you have to let people know so they can adjust what they're doing appropriately and you have to be able to communicate to them how much they should adjust. You don't want to shield. You want to make sure they are focused on the right things, but they are knowledgeable about the issues that could effect them. So I don't think we should shield the teams, I think we should inform the teams. We should let them know the context within which they're working so that they can perform effectively. If they know that they're going to be tough budget times, it's better to tell them rather have them guess and go off and do something that really doesn't make sense. If you know the budget is going to go up, same thing. If you know that you're going to have other issues, they need to be aware of it so they can adjust what they're doing. As Bill said before, everybody up here is a recovering engineer and we want to solve the problem, but we can't solve all the problems because we don't know all the details. The people working it know a whole heck of a lot better than anybody sitting up here. So the more information we can give them, the more useful information we can give them the better. The more that we can encourage them to talk to us, the better we can help them so you understand the context. So I would say shielding is a bad thing. Communicating and informing and providing the context in which they are going to perform is very critically important.

Bill Gerstenmaier: And I would add to that sometimes I'll explain to my team what I am going to say in the press conference or in an external message to Congress because the way I am couching what I am ready to go say externally isn't what I would tell the team, but I can't tell the external group exactly the way I would explain it to the team. So it's the same message, but I have to tailor it to the audience I am talking to and I want to make sure that my team knows I haven't totally lost it when I am explaining to the press that this is the way were doing it. This is what I have to say externally and then I actually give them rationale on why I think I had to state it that way and then I'll tell them what that really means to you down at a working level. It's what Chris said, the communication aspect is tremendously important because otherwise it gets distorted in the views of which way you're trying to do things.

Christine Williams: Bill as an executive, people will tend to tell you what they think you want to hear. How do you check to be sure that you're getting accurate information and then you're making it safe for people to give you both the good news and the bad news?

Bill Gerstenmaier: First of all, you got to be very appreciative of getting bad news which is sometimes hard. You know when somebody tells you something that you don't want to hear about a project or something isn't happening exactly the [right] way, the immediate reaction is going to be not so good. But I think you really have to shield that and actually build an environment kind of like Chris was talking about. He was talking about where people are willing to come talk to you about things so they are willing to share things. And bad news in some ways is maybe celebrated a little bit in a strange way that it's not something that I don't want to hear. You want to get to where people are not afraid to tell you what is really going on and you really have to cultivate it. It's very easy if you get perceived that you're going to reject certain opinions and you're not open, the system closes down very quickly and all you will get is folks that say, "Yes." I also try to reach out to people that I know who have very different opinions and different management styles than I do and I try to put them on my staff. I try to find somebody that complements my management style and complements my strengths. My deputy is Lynn Cline and she is great because she can really communicate. She has a sense that I don't have to communicate to people. She is not ready to make some of the technical decisions that I can make the way I make them, but then has a team we work extremely well. So then that also shows that I am open to other opinions, other ideas and then there are avenues. So you surround your folks not with people that are "yes" folks, but people that can add and complement to your style, to your management style, and your leadership style and actually help the team and your organization progress and move forward.

Stephen Jurczyk: We had a dynamic at the organization I was in where project managers would come in to see senior management for review monthly and basically senior management just beat the snot out of the project manager he brought in a problem. So what's the likelihood that project manager is going to be a problem the next time, right? So we made a big total shift to project manager comes in has a problem, look around the room and figure how can we help that project manager solve the problem and be successful? You'll find when you do that you get a whole different dynamic. When people bring you a problems, like Bill was saying, as an individual or as a group, you got to react to what they're saying in a way that they know they will be getting help not just getting beat up when they bring things forward.

Christine Williams: Any other comments on that?

Dennis Andrucyk: I think it's consistent with what they're saying. That all you have to do is just have to shoot one messenger and you're going to hear what people think you want you to hear.

Christine Williams: So consistency. Steve our studies show that highly effective executives always take a system wide view of the problem. When facing a difficult problem how do you approach it?

Stephen Jurczyk: So in between the arm twisting and becoming a senior leader I was a systems engineer and I gravitated towards that because I really like knowing a little about a lot of things. I really liked learning about electrical engineering, but I loved learning about GNC. GNC is the coolest: thermal, structural, the whole nine yards. I tried to use that kind of approach in leading and solving problems so it's going to be similar to what others have said. First thing is to understand the problem and I always try to make sure I kind of repeat my understanding of the problem up the chain and down the chain. Restate it and say, "Hey, am I even close to understand what we got going on here so we are actually solving the right problem?" Then try to assemble the right team, the right group of people to go solve a problem and leadership multidisplinary takes on kind of a whole new meaning. It's not just structural, thermal, avionics etc. Its procurement, legal, HR, facilities, IT. If planning any activity or any problem, you may and

most cases you will have to involve a large portions of all those skills and it's really important in your organization that everybody feels like they have a valued role. I think in an organizations I have been in we've kind of developed this caste system, you know, technology organization and the technical folks are at the top and the mission support folks might be somewhere at the bottom. Even some of the mission support folks might be somewhere at the more bottom. That's poison. If the leadership is not respecting all those folks, not including them, you will make less than effective decisions. Then you talked about allow the experts to do their thing. Gather, allow them to do the analysis and generate the data, and integrate that and come up with a solution. I've also found that, I don't have a tremendous amount of patience. Actually my boss has taught me a lot about this. You know I would get in a room and I would already know the answer. I've already studied it and knew the answer so I'd let one person talk halfway through the second person talk, I pound my fist on the table, "This is what we're going to do." And having the patience to let all the data get out on the table and integrate it was something I have had to learn. Patience isn't something that comes naturally to me. And then you know try to instill a culture of lessons learned. So go back and look at how you handled problems, how effective you were, not only the technical decisions, but how you went about it and embark on a kind of continuous improvement. Continuous learning, continuous improvement and see how you can do things better in the future.

Chris Scolese: Let me add to that one a little bit with a real example that Bill and I lived back when I was acting Administrator about taking a system view. When the flow control valve of that piece came off, you know Bill mentioned it a little bit yesterday when he was talking about what was going on. We were pretty confident based on what team told Bill and what he told me that we could get through the problem and we'd solve it. We had just changed administrations. We had a new administration, we didn't have an administrator, you had me. We had to look at it differently than we did with some of the other issues that happened when Bill and I were together, when the previous administration was here. We sat down and talked about where we thought our boundaries were going to be. There wasn't going to be any one to nothing votes, you know. We weren't going to be able to say, you know I wasn't going to be able to stand up and say were going to fly even if X doesn't agree. So we had a go off and work it and we knew we had a fly because we had to keep the space station going, we had to keep it crewed, we had to finish the assembly of it. So we kind of laid out a strategy that took into account the political situation that we were in, recognizing we probably weren't going to have administrator in a week. Certainly, we weren't going to have one in a month so we were looking at forever horizon on it and we had to go off and work in that dimension. So we had to take a look in a very different dimension about how we were going to go off and address the problem. I think to the team it didn't look any different. I can ask Bill to comment on it, but what we did, we went off and we briefed OSTP and spent, I don't know, two or three trips over there to go off and talk to them and we were talking before, don't shield things, and we didn't. Bill went over there and he explained it. Unfortunately the head of the OSTP had his undergraduate and Master's degree in aerospace engineering so it made it kind of easy to talk about it. He was really excited to hear about it. The other people kind of sitting around the room really had that "p" from the policy part were kind of like "Why am I here? Why are they talking about these things? It makes no sense. What's a Mach number?" Then when Bill showed him the piece, it's just a little piece, who cares? Little pieces can't hurt anything, right? So we had two or three trips and so that's the kind of thing, when we're talking about stuff, you have to look at the total environment that you're in and understand it. So I think it kind of plays on that. I don't know, Bill, if you want to comment on it too.

Bill Gerstenmaier: I would just say that Chris was tremendously perceptive in realizing that we were going to have a political problem of continuing to go on with the flight unless we had done this extra work to go brief this stuff. Again if you think about it the policy makers, all they're reading is the press reports. There not reading, they don't have any insights into whats really going on from a technical standpoint. NASA was kind of isolated from them because we didn't have an administrator to talk to them on a daily

basis. So it was tremendously perceptive of Chris to realize that we need to probably go over and talk to these guys. And then I was able to go over and talk to them and then after we talked to him pretty early in their process before we were getting down into where it was going to be a little more contentious. Then like I talked yesterday, we had a little bit of rapport with them that we weren't always bringing them bad news. I could actually talk to them and kind of laugh because the head of the OSTP was fairly technical you could actually have a fairly detailed technical discussion with him. But that really paved the way and then that prevented a big problem that would have occurred later. Again, it's like anything, a little bit of action very early in the process pays big dividends. If you wait until the problem is in front of you, then you got to apply corrective action. It's a lot more problematic to apply that much action to get to keep you moving forward. So you have to be looking way ahead and really scanning the horizon not only technically, but also politically to make sure you can keep and enable the team going forward. That was a good example of Chris looking forward and figuring out what we ought to go do right away.

Christine Williams: Dennis, how do you think a highly effective executive maintain an agency-wide view in keeping the big picture in mind? In your opinion is an agency-wide view only important at the executive level or is it important throughout the organization? And what do you personally do to keep expanding your vision beyond the center and beyond the day-to-day?

Dennis Andrucyk: I think there is a two part maximum to any question. To talk about the first part which is maintaining an agency-wide view, it's something that comes back to something Chris said a couple of minutes ago, making sure everyone knows what they are working on and how it fits into the bigger picture. I think that is pretty important. I know I can speak from personal experience, that in my career, I started out in the government, went to industry for about eight years and came back to the government. When I started out in the government the first time it was before I graduated and I started out as a GS-1, Step 1. Anybody else in here start out as a GS-1, Step 1? We got one. So even then I wanted to know what was going on, what was it that I was working on? I didn't need to know every detail. Did I need to know every nuance of the budget? No. Did I need to know every nuance on every other aspect of what's happening in the agency? No. But to know generally what I am working on, how am I working on, why is it important I think is very, it's really critical to get that information to all of our employees. It's not just the government, it's the contractors, it's the industry, and it's all of our people we work with. So that first part of your question the answer is yeah I think an agency view point and communicating the agency view point is very, very important. Also, some of the second parts of the question were collaborations working together I think if you look at the way how systems have matured and how they have become more complex, it's impossible for any one organization to actually execute a complete mission or a complete program because there is just so much to do, number one. Number two there isn't enough money for any one organization to do it. So we look for partnerships across the board, not just from one NASA center or multiple NASA centers but industries, academia, and internationally. So looking across, having that agency perspective, having a national perspective and then an international perspective is very important. It's easy to see that in shuttle and station, the human flight things, the missions are quite obvious. Bill Oakes, in the back, is the program manager for JWST. Sorry, Bill. If anybody knows about the importance of having an agency-wide view point it's Bill, the work he's doing. Some of the work is being done at Goddard, Johnson, I'm not going to name everybody because I'll be here for a while, all the NASA centers that are involved, industry, academia, international partnerships. All those interplayed together and without that interplay, and without it being managed and without not having an agency perspective, I don't think missions like JWST or shuttle or station could be successful. So I think the answer to all of those are, yeah it's critical to communicating that vision is quite important from the very top to the very bottom in the organization.

Christine Williams: Is there anything you particularly do to, or what resources do you sort of plug into yourself to make sure you know what's going on?

Dennis Andrucyk: More importantly I do get the information from Headquarters, it flows through and we have regular staff meetings where that information is also passed down. We also, I know I personally host open houses. We talked about communication being very important, well it is important in that you don't want to just talk to your own staff. I actually have open houses where we go to this large auditorium. I don't have a written agenda and we just ask people to come in and ask questions and tell us what's on their mind so that we do get a chance to answer any question folks may have. So it could be something as simple as, when are they going to finish the front gates so we can start using that gate to what's happening with the budget. So we get the full range of questions and we try to do our best to answer them.

Christine Williams: Thank you Dennis. I'd like to open the questioning to folks on the floor. Would you please come up to the microphone if you have a question.

Audience Question #1: This question is for anyone on the panel. Can you address how leadership behaviors may present themselves differently when you factor in gender and culture differences?

Chris Scolese: I can see no one is going to volunteer. You would have to ask that question wouldn't you. I don't see it being very different. I interact with a lot of people obviously at the level I do. You know, I can look at NOAA or Mary Glackin has a position very similar to mine and other agencies as well. I really don't see it different in how they interact with their people and interact up and across. I would say that unquestionable there is a difference with some people in how they react to Mary or to others when she talks, but for the most part at the level that we deal with, I don't really see any differences. I do see sometimes with the people that are outside of the organization they react differently to people of, you know, that are different in that they are not white males. In general, I would say not males. I think that's probably the bigger difference from what I've seen. But I also see it changing, it is very different. Mary does, and others just do a superb job of getting the points across and leading their agencies and them following it. But the traits that I see, you know, I think the good traits you see it in everybody. It doesn't make any difference who it is. They can communicate, they can inspire, they're knowledgeable, they're constantly learning as to what about their job, about how to relate to whatever it is they need to relate to. Unfortunately, the bad traits that you see in poor leaders where they are impatient and they don't let people get their questions. So the traits are all the same. I think to some extent you do see differences in how people react, but I don't see it as much.

Stephen Jurczyk: So at one point at Langley, I was the only male on the Office of Director. I was the token, token male, which is kind of different for NASA. But to be honest with you, it just kind of didn't matter. We were just a team working together to run the center and solve problems and you know, people would ask me, "How do like being the only male up there?" I've learned a tremendous lot from Lesa and Cindy Lee and everybody in the office. We did hire a chief engineer at NASA, we have another male in the office. In general, you do need to get to know people, the cultural part of it. You do kind of get to know people, know what they like and what they don't like so you can figure out a way to approach them in a way that is going to be most effective. So I try to get to know folks. You got to be careful because some people are private and want to keep their lives kind of private. You need to see the line there, but I do really try to get to know people so you can approach them in a way and communicate with them in way that is most effective.

Dennis Andrucyk: I would share a similar experience that Steve was talking about. When I was the deputy director of Engineering we - Orlando Figueroa and we still have is every morning 7:30 tag up

meeting. In an organization that is 1,300 civil servants and a couple thousand contractors we have to make sure we can divide and conquer our meetings, who is going where, who is doing what. But it kind of occurred to me that I was the only white male in that group of five, but it didn't matter. The people that were there were there because they were good at what they did, which was a very fortunate thing. That doesn't mean there aren't issues that need to be address with regard to race, national origin, and gender. I know at Goddard we got several programs that are ongoing where we have advisory committees that meet with center management and all the directors of at least twice, minimum of twice a year. And the senior champions on each one of those advisory committees to make sure that we are aware of any sensitivities, something we may be saying right, something we may be saying wrong or how we are approaching folks, making sure we are including people. I happen to be the senior champion for the African American advisory committee. There are many advisory committees on center. In addition to that, we just went through what was called a race, power, and privilege workshop where we talked about differences in race and it was very informative. Those types of things make it a safe environment for folks to bring up issues, concerns. Because of their gender, because of their race, they're origin they may feel they are not being heard. I think that type of culture helps engender in an environment where it is OK to bring up and concerns and make sure everyone is equally heard. Is it a perfect world probably not, but are we actually making strides in the right direction, I like to believe we are.

Christine Williams: Next question

Audience Question #2: I particularly wanted to follow up with Mr. Gerstenmaier on surrounding himself with highly qualified people to accentuate the strengths of what they do. I wanted to ask how do you address the weaknesses that come up that you have to address on a day-to-day basis? Sometimes we don't see those, they creep up behind us. That is really what I wanted address. What do you do about the weaknesses that really kind of just bite us in the rear?

Bill Gerstenmaier: That is a tough thing, but if you see the weakness, I think you need to get, again, in this open mode where you can actually talk to folks about what weakness you see and they should also feel free to talk to you about what weakness you see. I try to make sure if I, if I give a presentation or a chair a meeting, you know, I honestly try to get feedback from folks and I am as interested in the negative feedback on what I've done as I am in the positive because I know there is things I can improve on. And being in this continuously learning mode, I try to do that even with my staff. So if I see something that didn't go quite as well as it should with this staff member that presented something or led a meeting, you know, I will not bring it up in a public session at all, but privately off to the side, I'll go talk to them at the right time and I may wait a little while until it's not quite as fresh in their mind. It won't be quite as emotional to them at that point. I won't wait until performance evaluation time and then whip out my list of things you've done all year. That's not the way to do things, but at the right time a couple of days later I'll quietly mention to him, "Hey you know when you were doing this you might have been more effective to do this or to talk that way." I'll do in a pretty subtle, gentle way and my staff gets pretty perceptive that I am not a big pound-on-the-table, kind of scream-at-you guy, but I am pretty firm on about what I want you to go do. So when I quietly mention in a certain way, they kind of understand and then there is a mechanism to go work on it. But I think your right, for you to be in a continuous learning environment, we've got to be in that mode where you are continuing to get better and continue to learn. You know, I look at our astronauts, which is a kind of a fun thing. They do these shuttle training exercises where they take the STA aircraft and they do a dive on the runway and then they do that and then they're immediately handed the digital data on how well they did. Were they on the center line? Off by a foot? Three-feet high? And they immediately get that feedback on how well they did on that run and there going back up to altitude to go do another dive and some of those are failures and those are not acceptable for flight. So you have to take that input immediately as a pilot and how poor you did, its

objective and then digest that at the same time you get your head back into the game and to come back and do another dive again. So the goal for us is like that to be able take that hard criticism, not let it affect the next performance we got to go do, but to internalize it, get better, get stronger and then go do it better the next time around. So we need to be all open to learning and recognizing each one of us every day there is something we can be doing better. That is not a flaw, we're human. Just accept that and keep striving for better performance and that helps the overall team achieve in a better direction.

Dennis Andrucyk: I'd like to add something to that real quick. One of the things I really like about the NASA culture is when questions are asked or performance information is given, quite often, it is an open environment across the agency, I believe, where questions and that kind of feedback are not taken personally, but it is an attempt to improve our performance and improve the way we're actually doing things. When we can actually take that criticism in that light, I think it makes for a better organization all the way around.

Chris Scolese: Yeah let me add to that too. It's critically important that we do that. NASA is at its best when it's questioning and asking can it do better, you know, can it do it different. As we talked about before, you know we do things that haven't been done before so we have to have that kind of an attitude. And it's something that I believe is inherent not only in NASA, but in our industry because we have to do it. I think it's inherent in engineering, you have to ask that question all of the time. Did I do it right? Could have I done it better? What could I do different? I want to add something else to it. Bill talked earlier about, OK we can talk amongst ourselves the way we are right now, but sometimes when you talk to the outside world it gets misperceived. When NASA is asking a question, when we are at design review and they say, "Could you do it different? Could you do this different?" Or when you're at a Flight Readiness Review and people are asking questions. Often times that is misinterpreted as we don't know what we're doing. When in fact what we're doing is were trying to learn from what we have. We're trying to understand the differing opinions and trying to come up with a solution that makes the most sense given the conditions that we've got. So I think when we talk about it, we need to be cautious about that because there are people that do listen and we need to make clear to people that we're questioning things because we want to do things better. We're constantly learning. And like I said, I believe it's inherent in us and I believe its inherent in our industry in general. So I just wanted to add that.

Christine Williams: The last question

Audience Question #3: I am curious about managing conflict and how you all manage conflict. You know the nature of the work we do even to being innovative and creative, you're going to conflicting opinions. Often times, it's management tendency to sort of avoid conflict or not dealing with it head on. So how do you guys approach conflict in terms of, especially if it is potentially contentious?

Chris Scolese: Well, I think we all want to avoid conflict. But differing opinions do come up and that's the really the way you want to try and get it to that point. Try and avoid the conflict by getting people to understand what it is they want to accomplish. I know a lot of people do this, but you know you try, one of the things I do is I encourage people if they have a differing, if they are butting heads and this is just a tact I actually learned while I was in the Navy. So it's not something that I have come up with. I ask them to write down what it is that they want to accomplish and what is it that is there and then exchange. You know to go off and understand, it is kind of silly when you think about it, but it forces the person to go off and think about what it is they're disagreeing about, what it is they want to accomplish. And it clarifies they're thought process and then you know, the two or the three, whatever it may be, sit down and have a discussion about it. You can't always do that so sometimes you have to work it out in real time. But to the extent that you can see the conflict coming, see the disagreement coming, you can go off and you can work to try in get that done. In a meeting you can often times see it happening and start, you know,

preparing people to go off and do it. What you want to avoid is a polarization where it's my way and there is nothing in the middle. So you have to find a way to manage that, that disagreement in the most productive manner you can. Everybody has different tactics. I just gave you one that I kind of use.

Dennis Andrucyk: I'd like to add to that. I don't think Chris means to send somebody an email.

Chris Scolese: I do not mean an email.

Dennis Andrucyk: Write it down and then face-to-face communication is actually an email to try and resolve issues is probably the worst way to try and resolve a conflict. Getting people together in the room to talk about the issues is the absolute best way, I agree with you there. The last thing I would add would be to do it soon. When there is a conflict, or more importantly when there is a difference of opinion, those things don't get better with time. They are like a parking ticket, they accrue. The most important thing you can do is get the folks together in the same room at the same time and work it out in a rational manner.

Christine Williams: Unfortunately, we are out of time. I'd like Linda to raise her hand. Linda is standing up in the back. We're actually doing a validation of the study that we did that gave us all this great behavioral information and if you are an executive within your organization, we would love for you to sign up with us to do a short survey that will help us validate this data we have on this study. You can either give your card to Linda or you can sign up on a sheet of paper. Thank you very much.