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NUCLEAR REGULATORY COMMISSION

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INTERNAL SAFETY CULTURE TASK FORCE

PUBLIC MEETING WITH EXTERNAL STAKEHOLDERS

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THURSDAY, DECEMBER 4, 2008

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ROCKVILLE, MARYLAND

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The Task Force at the Nuclear Regulatory Commission, Two White Flint North, Room T8A1, 11545 Rockville Pike, at 8:30 p.m., Mindy Landau, Office of the Executive Director of Operations, presiding.

PANELISTS:

JOHN BRESLAND, U.S. Chemical Safety Board

TRACY DILLINGER, NASA

DAVID LOCHBAUM, Union of Concerned Scientists

TOM VALENTI, Baltimore Gas & Electric

NRC STAFF PRESENT:

GREGORY JACZKO, Commissioner

PETER LYONS, Commissioner

JUNE CAI

CINDI CARPENTER, Office of Enforcement

DOUG COE

CATHY COLLELI

VIC CUSUMANO

LAURA GEDEL

BETSY KEELING

MOLLY KUFE

MINDY LANDAU, Office of the Executive Director for Operations

CAROL LAZAR

STU MAGRUDER

RENEE PEDERSEN

J. PERSEVSKY

AMY SNYDER

GLENDA SOMERVILLE

MICHAEL STEINBERG

BOB VASINSKI

MARTIN VIRGILIO, Deputy Executive Director for Materials, Waste, Research, State, Tribal and Compliance Programs

ALSO PRESENT:

JOHN BUTLER, NEI

JANET FREIMUTH, DOE

NORM HENDERSON, Bechtel SAIC

DANIEL HORNER, Platts

TOM HOUGHTON, NEI

CHIP MARTIN, Defense Nuclear Facilities Safety Board

SUZANNE MELLIZITI, DOE

JEANNIE RINCKEL, NEI

JAMES ROSS, GE-Hitachi

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P-R-O-C-E-E-D-I-N-G-S

(8:33 a.m.)

MS. LANDAU: I think we're going to have a really great, interesting meeting for you this morning. Our topic is internal safety culture, and we're going to be talking about the Internal Safety Culture Task Force here at the NRC.

My name is Mindy Landau. I'm a branch chief in the Office of the Executive Director for Operations. I'll be facilitating the meeting for you today, and before we get started in going through the ground rules of the meeting and so forth, I'm going to introduce Marty Virgilio, who is our Deputy Executive Director for Materials, Waste, Research, State, Tribal and Compliance Programs.

MR. VIRGILIO: Very good, Mindy.

MS. LANDAU: Pretty good, and he --

MR. VIRGILIO: Good morning.

MS. LANDAU: He's going to introduce Commissioner Jaczko, who is going to make some opening remarks, as well.

MR. VIRGILIO: Thank you very much, Mindy, and good morning to everybody. Welcome to our meeting on internal safety culture. This is a great opportunity for us to share with you some of the

insights that we've gained from the program that we're doing and also a great opportunity for us to hear from you about your thoughts and suggestions, your experiences, and how that might factor into our programs and our activities.

Safety culture at the NRC, we've had it for quite some time, and I feel very comfortable that it has worked well, but we face some challenges. We face a lot of challenges around continuing with new technologies and new people, especially new people new to the NRC.

If you look at the NRC today and look at our statistics, we've brought in over 1,000 new people over the last two years. If you look at more broadly, about 50 percent of the organization has been with us for less than five years, and in the future we'll be gaining more employees, so what we want to do is make sure that we have the right framework in place, the right mind set, the right culture in place, not only for the new employees but for the future, as well.

We've enjoyed a lot of Commission support for this program. I really appreciate the fact that Commissioner Lyons is here with us today, and Commissioner Jaczko is going to be speaking to you with his opening remarks.

So, with that, I'm going to turn this over to Commissioner Jaczko and allow him to open this meeting. Thank you all very much. Mr. Jaczko?

COMMISSIONER JACZKO: It's a slightly unique format, so hopefully I'm standing in the right place. Well, I want to thank everybody for being here today. This is a very important meeting, and, as Marty indicated, we are an agency with a changing demographic, and as any safety regulator needs to always ensure that we have a good safety focus and that the people that we have here.

And just talking about the number of people that we have who have been with the agency five years or less, to put that in perspective, many of those people were not here at the time when the things like Davis-Besse happened, so some of those people haven't experienced some of those issues that we've gone through and learned the lessons that we did as an agency, so it's important that we find ways to make sure that we transfer that knowledge and transfer those ideas about safety, so I think it's really an important piece of this.

I also want to acknowledge Commissioner Lyons, who has certainly been a real champion on these issues. We've worked together on a lot of safety

culture things, and I'm glad that he's here and that we'll be able to continue working on these issues in the future. He really has been a very strong supporter of the need to have a focus on safety culture at this agency.

In particular, he's been really instrumental in looking at the safety culture, focusing those on the materials side of the house, where we've been focused primarily in the beginning on the reactor side, and Commissioner Lyons has really been a champion in taking that beyond the reactors to materials, as well.

I also want to thank everyone who is listening and participating over the internet. I'm always pleased when we can -- when we can take advantage of some of the new tools and technologies that we have to be able to open up our meetings to the public at large.

I have to admit I learned yesterday about this new -- I was reading an article about this new idea. I guess it was Twittering, where you're constantly sending out thoughts and random thoughts on mobile devices and things like this, and I'm not sure that we need to do that for this meeting, but I'm always looking to see what the next new tool is.

Safety culture has been an important issue for me for some time, and I think I remember back, the very first regulatory information conference that I attended. One of the sessions that I attended was a meeting on safety culture, and the topic of that really was about whether or not we could measure safety, and I think that's still a question that we're debating and helping looking forward to.

But one of the things that stuck in my mind was a comment that was made by someone in the audience at that meeting, and that comment was, I think, focused not necessarily at the industry, but it was focused at the agency itself, and really the comment was directed to or intended to, I think, inspire us to make sure that while we had a focus on safety culture at the licensees, that we also made sure that we had a focus on safety culture within the agency, and I think that's a very important point and something that I'm really pleased to see that we're moving toward with a very specific initiative to take a look at that and get an understanding of what our safety culture is internally.

Right now, we have a variety of initiatives, I think, ongoing in that area. We have some things going on in general in safety culture.

One of the things that Commissioner Lyons and I worked on doing was directing the staff to begin work on a policy statement on safety culture so that we take advantage of some of these things that we've learned and we really take a step back and look holistically at the ideas of safety culture and think about what really does that mean.

What does it mean for the agency? What does it mean ultimately for licensees? What does it mean for the public? And try and come up with a policy statement on how we see this issue and how this issue should move forward in the future.

And, as I said, I'm very pleased that this effort is now underway and the staff is working on developing this draft safety culture policy statement, and they'll be having a series of public meetings, and I encourage all of you who are here and those of you who are participating by the internet and through the telephone to be involved in participating in this meetings, as well, because that is one of the important parts of these safety culture activities.

The second and probably, really, one of the more direct pieces in the course is this initiative right now, and this initiative that many of you are here for and that we have the panel here to

give us some good information about is really looking at our internal safety culture, and this is really the second prong, I think, in this two-prong approach to safety culture.

Safety -- internal safety culture is really, I think, an interesting area, and a lot of what it comes down to, I think, for this agency is our ability to have a focus on safety in the decisions that we make and to make sure that we have a good and open discussion about those decisions and that we have a healthy respect for differing views. I think that's really one of the most important elements to any good internal safety culture that we can have.

The NRC has done a lot, I think, in recent years to ensure that we do that. We've had a differing professional opinions program that has been, I think, a very strong program to provide an avenue for employees to raise differing views, to go through a formal process. We've also established a more informal process, which I think has really been an improvement, and that is our non-concurrence process, so we provide an opportunity for our staff to register and express differing views, and that is not always the easiest thing to do.

At the Commission level, we have the

opportunity to do that all the time. We're structured in that way. We're structured with five individuals to try and make collective decisions, so invariably we have a form and an ability to discuss ideas and talk about differences.

It's much more difficult, I think, within the staff to do that, and that's why I think safety culture is so important, because as a Commissioner, I want to hear what those differing views are. I want to know what they are so that I can understand what the right approach is, and as I talk to my colleagues on the Commission, we can understand what the right focus is and what the right approach will be to any problem.

So I think it's good that we're having this meeting today and that we're taking a look at these efforts to really expand and improve upon the strong internal safety culture that I think we have right now, and I think this meeting is really a good opportunity to hear from some other people outside of this agency to get their feedback and their thoughts on how we can improve our safety culture.

So I appreciate your being here, and I look forward to what I think will be a very good meeting, and I should mention that Dave Lochbaum was

the person who made that comment at the -- I think three or four years ago, so I'm glad that he's here and able to share some of his thoughts, as well as the other -- the other folks that are here, as well, so I look forward to a very big meeting, and I look forward to hearing some information about your discussions. Thank you.

MS. LANDAU: Okay. So, as we discussed, the main focus of this meeting is really to gain public input, stakeholder input into our internal safety culture program. It's what we call a Category 3 meeting, which is the widest level of participation, so we're going to have an opportunity for you to comment and ask questions.

The first part of the presentation will be the panelist presentation. We ask you to hold your comments until the Q&A session, and then we'll be entertaining comments from the room and questions, and then what we'll do is we'll go to the webinar folks.

We think there might be close to 50 people on the webinar right now. There were more people that signed up last night, and then we'll ask them if they have any questions, and we'll just kind of take it from there.

If there's any questions that we can't

answer, we'll put it on the parking lot, and we'll get back to you. We'll also be giving you an email address at the end of the meeting that you can send your questions or comments into that you don't think of during the meeting, so we'll follow up in that way.

Please keep in mind that we're sending all of the -- all of the comments in the room over an audio bridge, so please speak clearly. If you have something to say, stand up. Speak loudly so everybody on the webinar bridge can hear you.

We're also transcribing the meeting. We'll have those remarks made available to you. We'll also have a recording of the meeting made available afterward, as well as all the presentation materials on our web page, so we'll be getting that information to you later, and I would also ask that for those of you in the room that you would silence your electronic devices and cell phones and so forth so you don't cause any disturbance there.

We also ask that for those participants in the room that you fill out a public meeting feedback form. Those forms are in the back of the room. We'd like you to take those, and you can mail them in when you get back to your office. That would be great, but we'd like to hear your feedback on the meeting, and

for those of you on the webinar, when we provide the email address at the end, if you would give us your comments on how the webinar worked, how the meeting went, we would definitely appreciate that, as well, since we're kind of trying this out for the first time, and it's -- you know, we're sort of uncertain of how it's going to go, but we're hopeful that it's going to go well.

So, with that, I'd like to introduce our first panelist. Dave Lochbaum is the Direct of the Nuclear Safety Project for the Union of Concerned Scientists. Dave leads UCS's efforts to ensure the safety of nuclear power in the United States by monitoring licensed commercial nuclear plants to identify and publicize safety risks.

Mr. Lochbaum has more than 17 years of experience in the commercial nuclear power plant industry, in stored up testing operations, licensing, software development, training, and design and engineering. So with that, Dave, take it away.

MR. LOCHBAUM: Well, thank you, and good morning. I wanted to start with a couple -- next slide, please. I wanted to start with a couple of compliments for the NRC, the first being that the NRC deserves quite a bit of credit for establishing the

Internal Safety Culture Task Force and taking all the lessons it learned from addressing safety culture at operating nuclear power plants and bringing it in-house. The work done on the licensing, the licensee side, was very good, and it should be equally successful when brought in-house.

The second compliment is that the NRC also deserves credit for bringing -- engaging external stakeholders along this path, and when I wrote that initially, I didn't intend for it to imply that you couldn't get there without external stakeholders. That wasn't what I meant, but I think that it's important for external stakeholders to see what you're doing so that our impression of where the NRC is isn't stuck in a snapshot of the past but is more reflective of where you are today and tomorrow.

So it's that aspect of engaging internal stakeholders that I was trying to compliment there, not implying that you couldn't get there without outside help. Next slide, please.

I'm not a safety culture expert, as others are on this panel, so I view my role this morning not so much as to tell you ways to fix things but adding items to the to-do list for the Internal Safety Culture Task Forcer, so in that light, this is a list

of the items I would hope the task force will address at some point in the future, the first being corrective action programs. The NRC should develop corrective action programs like the industry uses.

The NRC also needs to complement the work it's done on its differing professional opinions program with some follow-up efforts, improved follow-up, and I'll address that a little bit later. The NRC's tag line is protecting people and the environment. We observe that the NRC staff are people, too, and they deserve equal protection, and I'll elaborate on that a little bit later, as well.

I am not shy about disagreeing with the NRC, and I don't have the same opinion of the non-concurrence process. I think it's very bad and needs to be fixed. In fact, it's the first thing I would fix if I could. It's an awful process and really needs to be fixed, and I'll explain a little bit later.

We also think that as part of the helping the outsiders understand where the NRC is, public surveys should be conducted at some frequency and the results made publicly available. We also think the process needs to include a formal continuous improvement component similar to the process that's

within the rector oversight process for the last eight years or so.

And lastly, communication, communication, communication is the key to all this. How you communicate internally to your staff and externally to others is the key to whether this program works or not. It can work, but if nobody knows about it or has the wrong impression of it, then you've lost a golden opportunity. Next slide, please.

For the corrective action program, the straw man we would put forth is that each program office within the Nuclear Regulatory Commission should develop a corrective action program for problems within its area of responsibility. A sponsor perhaps at the EDO level should monitor the efficacy of these various corrective action programs to make sure that each program office is achieving the NRC's expectations.

The reason I say this is a few years ago we did a report called "Walking a Nuclear Tight Rope," which looked at the 51 times that a nuclear power reactor has been shut down for more than a year to restore safety levels to the minimum acceptable to the NRC. The most common thread amongst those 51 year-plus outages was an inadequate corrective action

program.

If you're not finding problems at the earliest opportunity or not fixing them right the first time, then your performance is going to steadily decline. For example, if you're making 10,000 decisions a year and are 98 percent effective, there's 200 problems that are accumulating every year, so finding and fixing problems is crucial in a safety culture environment. The next slide, please.

The DPO straw man -- some changes have been made to the DPO program in the program in the last few years that have been helpful, making it easier for staff to raise issues and get those issues addressed in a timely manner. I guess from our perception it's similar to what the process was that was used for evaluating reactors prior to the reactor oversight process where the NRC expended a considerable effort determining whether you were a SALP 1, a SALP 2, or a SALP 3, and at that point, fatigue or something built in, and there wasn't much effort acting upon those determinations.

We think the DPO process is similar. A lot of effort goes into determining whether a DPO is valid or not valid. At that point, the process breaks down, and the follow-up on any recommendations for

valid DPO findings seems to be inconsistent. What we would suggest is that accepted recommendations from the DPO process being entered into a corrective action process and then tracked to a timely resolution.

In addition, we think the ACRS should periodically review a sample of DPO files, both ones that were not substantiated and ones that were, to hopefully confirm that the right resolutions were obtained. We think that would have the dual purpose of also building trust in the program for people who aren't using it who can see the ACRS is giving it a stamp of endorsement and then would have confidence to use it if the time came for them to do so. Next slide, please.

In recent years, the Nuclear Regulatory Commission has changed its regulations for nuclear power plant workers and how many hours they can apply without being exposed to undue impairment from fatigue. The NRC staff are also people and have the same potential for impairment, yet what we're hearing anecdotally is that NRC workers, because of the focus on schedule and some of the changes due to the increased staff and whatnot, are working tremendous amount of hours week in and week out with the same impairment potential that nuclear power plant workers

do, but there is no protection for the nuclear staff working long hours week in and week out.

That needs to be fixed. It's as unacceptable at the NRC staff level as it is at a nuclear power plant site, so that needs to be remedied. It is a challenge. The NRC is a growing agency. There are people moving within the agency. There are people retiring from the agency.

There's a lot of dynamic efforts within the agency, but schedules need to be set such that people can do that work in a reasonable amount of time without sacrificing their performance and their health in their outside lives. That has to be done. Next slide, please.

The non-concurrence program for us as we view the non-concurrence, it's basically a work-around that facilitates non-resolution of nuclear safety issues. We think it's similar to the Challenger O-ring issue where engineers identified a problem. It was raised, discussed, not resolved, and the Challenger suffered the consequences.

You can't have subject matter experts and technical reviewers raise technical concerns or safety concerns and simply paper over with a CYA for the reviewer that says, "I raised the issue. It's not my

fault that management didn't act upon it." As Challenger and other things have shown, that can kill people. You simply can't allow safety issues to be raised and not resolved.

I'm not saying or suggesting that management's always wrong, and the worker is always right. That's definitely not the dynamic. We're also not suggesting that every issue needs to be entered into the DPO program, but there needs to be a healthy workforce-management discussion when differences come up so that they get resolved properly and not simply documented and filed away somewhere. Next slide, please.

We understand, perhaps incorrectly, that the Inspector General is going to have another survey of the NRC's workforce next year similar to surveys that have been done in 2005, I think, and 2001 or 2002. Periodic surveys are a valuable thing. As I understand the process, and, again, I'm not a safety culture expert, but it's very difficult to come up with an absolute value of where safety culture is at any one moment.

It's an easier task to determine if safety culture is better than it was six months or two years ago, so it's a relative thing. It's a much easier

goal, so if you're doing periodic surveys, you're getting more valuable information if you make that publicly available.

Then external stakeholders can see, hopefully, that things are getting better and why they're getting better and have some trust in statements that things are getting better, so we would encourage the continuance of periodic surveys with the complement of making those results publicly available. Next slide, please.

One of the aspects of the -- we're big fans of the NRC's reactor oversight process that was implemented in the year 2000. One of the aspects of that reactor oversight process that we're most fond of is the built-in self-assessment that's done every year.

The NRC has developed metrics to evaluate whether that process is meeting its expectations. Every year, they look at those metrics to see if those expectations are being realized. They also survey internal and external stakeholders to supplement that information and evaluation, and adjustments are made based on the objective evidence that that effort brings forth.

That's an incredible feature of a process.

Something like that should be built into the safety culture at work that's done as a result of this campaign to establish metrics that are guiding you toward the expectations you've set for the program and allowing mid-course corrections to be made when those expectations may not be met, despite the best intentions.

We think part of that should be that as the NRC sends out augmented inspection teams or special inspection teams to look at problems, unexpected problems at nuclear power plants, it would be worthwhile to be a formal part of that process is to look at direct oversight process, the baseline inspections, the performance indicators, to see if those need to be adjusted to have normal oversight handle those in the future rather than have augmented inspections teams or special inspections fill in that gap.

We're not suggesting that there'll never be an augmented inspection team or never be a special inspection team, but we think that provide -- those instances provide opportunities to evaluate the reactor oversight process to again to determine whether what you have is sound or there's opportunities to tweak it a little bit to make it even

better tomorrow.

We also think that when the agency takes actions in response to Inspector General or General Accounting Office recommendations or findings they should look at why weren't those problems identified by staff efforts before the Inspector General -- before the GAO got into that. Sometimes the next person walking down the hallway will see the puddle on the floor, so there are times the Inspector General and the GAO will find things, but in a very healthy safety culture, the vast majority of problems are being identified in-house by the staff.

So we think these external auditors finding things are opportunities to figure out where could we have done better and what we look at or how often we look at to have found that before the Inspector General, GAO found it, so we think those are opportunities that should be taken advantage of to the fullest extent. The last slide, please.

As I said, communication is the key to the process. In our view, failures to communicate create vacuums that are often filled by rumors, innuendo, and superstition. Typically, those aren't as effective and accurate as reality, so the result is failures to communicate allow -- typically allow safety culture

problems to form when there is no foundation for them or take a small issue and blow it up into epidemic levels because people's imaginations have run wild, so proper communication is a key to having an accurate picture of a situation, whether it's good or it's bad, to avoid having people's perceptions create a bad and a worse environment than exists originally.

It also allows the agency to have its efforts focused on making true progress, rather than fighting phantom problems, so I can't stress enough the communication aspect of what the internal safety culture team is doing. With that, I appreciate being included this morning. I look forward to hearing what the NRC staff and the other panelists have to say. Thank you.

MS. LANDAU: Thank you, Dave. Okay, our next speaker is John Bresland, and John is the Chairman of the United States Chemical Safety Board. He served as a Board Member of the U.S. Chemical Safety and Hazard Investigation Board from 2002 until 2007.

He worked for Honeywell International in West Virginia, Philadelphia, Virginia, and New Jersey for four years, and while there he held positions in process engineering, environmental compliance, project

management, and manufacturing. Mr. Bresland is a member of the American Institute of Chemical Engineers, the American Chemical Society, and a fellow of the Royal Society of Chemistry, so --

MR. BRESLAND: Thank you.

MS. LANDAU: -- thank you, Mr Bresland.

MR. BRESLAND: Is it okay if I stand up?

MS. LANDAU: Please.

MR. BRESLAND: Can people hear me if I'm standing up?

MS. LANDAU: Yes, as long as you project.

MR. BRESLAND: Project. Project. Can you hear me at the back? I'm projecting right now. Okay. Why don't you just keep on going through the slides until I tell you to stop? Let's keep on going.

Okay, this is what I wanted to talk to you about today, and it's a little bit different from a colleague from the Union of Concerned Scientists, because obviously he knows a lot about the Nuclear Regulatory Commission, and I don't know anything. I plug in my toaster in the morning and make toast with it, but obviously I know that you are doing a terrific job of keeping the country safe from accidents, so I'm gonna tell you a little bit about the Chemical Safety Board and, you know, how we tie into this whole issue

of safety culture, as well, and this is what I have for my agenda today.

Tell you a little bit about the Board, talk about some of our investigations, again related to the issue of safety culture, talk about culture in organizations in a general way, not necessarily just safety culture, and talk about a specific accident that had a significant effect on the refining industry in the United States, probably something similar in a way to what happened in its effect in terms of what happened at Three Mile Island, and then my thoughts on developing a strong safety culture.

So, Chemical Safety Board is one of those independent agencies in Washington. I know the NRC has, what, several, 3,000 employees? You could probably fit the whole of the Chemical Safety Board in this room without too much trouble. We have about 40 employees. We're located in Washington, D.C., and our job is to, you know, investigate accidents in chemical plants and oil refineries.

We're modeled after NTSB. If you know what NTSB does, they do planes, trains, and automobiles. We do refineries and chemical plants. We also do facilities that are using chemicals, so it's not just your stereotypical chemical plant or oil

refinery. It's a facility that is using a chemical that has had an accident, and we have --

Similar to NRC, we have five Board members nominated by the President and confirmed by the Senate. We have one vacancy right now, so we're waiting to see what happens with that. As I said, we're located in Washington. Let's go ahead.

In a typical year, we see 800 to 900 chemical type accidents, and of those about -- we estimate maybe 30 are really worthy of our investigation, but because we're a small agency with limited resources, we do 8 to 12 accidents a year. It's interesting. You know, GAO is mentioned. GAO did come in and do a study on us, as they do with all agencies, earlier this year.

I wasn't there at the time. I was awaiting confirmation, and they told us, "Look, you say you're seeing 800 or 900 accidents a year. The Clean Air Act says you should be investigating 800 or 900 accidents a year," so we're kind of struggling with how do we clear that issue up, but the reality is we go to the big accidents, the more serious ones. Okay.

Let's -- I'm just going to talk about one aspect of this slide. This is our whole process.

We're doing investigations, but one thing that we have done, and I think it really does tie into our safety culture that we have done in the last several years is when we finish an investigation, and for those of you here who are here in person, this is what a typical investigation document would look like. It's several, maybe 100 to 200 pages long, lots of details.

We have taken that, and we have turned it into a video, and the video is 30 minutes long, and the video consists of a talking head like me saying, introducing what we're seeing in the investigation. Then there is a simulation of the accident that we do. We've hired an outside person to do a computer simulation of the accident.

We have news coverage of the accident, and we come up with the recommendations, and we find that, surprisingly enough, to be more attractive to people than reading a 200-page report, and we are -- these are being used all over the world. We're getting requests for them from Indonesia and Thailand and Australia and South Africa. Everywhere people are looking at these, and they are really a terrific learning tool and a terrific education tool for people on the front lines.

Okay, so I'll just quickly go through some

of our investigations. These are photographs. This is a pharmaceutical operation that had a dust explosion, just basically destroyed it, just leveled it. Let's go to the next one, a chlorine release in St. Louis, Missouri, 24 tons of chlorine released from a rail car. Luckily, not too many people lived close by, and there weren't any killed.

This is an interesting one, because this is a facility in a very nice neighborhood just north of Boston that had a little printing operation in the middle of the -- in the middle of the community, and we didn't realize that, you know, they were running well for many, many, many years, and 2:00 in the morning, this little facility exploded and destroyed 20 to 30 homes in the area. We have a video on this, and the video is very dramatic, because it does show the impact of the accident.

This is a combustible dust explosion, and we have -- probably in the room here there is some of that product that actually caused that combustible dust explosion to occur. If any of you are drinking coffee, sugar refinery, sugar dust blew up, killed 14 employees and destroyed the facility. If you want to think of an example of a poor safety culture, this is the place to go to. There was definitely an issue

around housekeeping safety culture at this facility.

A small facility in Jacksonville, Florida, that blew up, making reactive chemicals, lost control of the reaction. It exploded, killed four people, including one of the co-owners. This is another. This is when the actual accident was taking place, this photograph. Go ahead.

A convenience store in West Virginia near Beckley, West Virginia, propane released. Propane got inside the store. The thing that didn't happen in this accident was there was no evacuation. There should have been an evacuation, because the normal procedure that says when you have a release of propane, you evacuate.

In this case, they closed the store, stayed inside. The fire department showed up. They stayed close by. It blew up, killed two firefighters, killed two propane technicians, and injured the four females who were inside.

Static electricity issue. Let's go to the next one. Oil refinery, Valero Refinery north of Wichita, Wichita - no, north of -- in northern Texas caused by probably a problem that may show up in the nuclear power industry, cold weather, freezing. Control device froze up. It thawed out, and there was

a release and caught fire.

So, let's talk about safety in organizations. I was just thinking when I put this slide together of examples of not necessarily safety culture but just generally culture, and I just want to quickly go down these. When I think of the hotel industry --

I do a lot of traveling in my job. I tend to stay at a particular brand of hotel, and this is not here for an advertisement. I try to stay in a Marriott, in Marriotts or the Marriott chain. I always feel like when you go in there, there's a certain culture that is sort of spread among everybody of getting pretty decent service. Sometimes it's not, but, you know, most of the time it is.

The airline industry, the example I use there is Southwest. You get onto Southwest, and the flight attendants -- and I don't -- you know, I think it's a very, very safe airline, as well, but the flight attendants have a certain culture. They behave in a certain way. They have fun, and they make everybody else have a little fun, even though you might be three hours late and sitting on the runway.

Obviously, the whole Wall Street -- I'm not sure if this slide is truly up-to-date right now,

but maybe going in the other direction. The airline safety culture in the whole aviation industry, you know, we all fly and we all get there, and the whole aviation industry has a really strong safety culture, especially in the United States.

It may not be in other parts of the world, and I always look upon the nuclear power industry as having a strong safety culture. I may be wrong, but that's my perception from the outside that they have run very, very successfully since Three Mile Island without significant, significant issues, and then chemical manufacturing.

I used to work for Dupont, way back when when I was a younger person, and one thing I learned when I worked for Dupont -- Dupont has a very strong safety culture, and if you want to talk to people about safety culture, go and talk to the CEO of Dupont, because I think you will find that they have a strong safety culture that goes back all the way to when they were a powder company in Wilmington, Delaware, and the plant manager of the powder company or the owner of the powder company, who, I guess, was a Dupont back then, had to live right next door to the -- when I say powder, I mean the explosive powder, and the whole safety culture started from there.

Now, if you work for Dupont, one of the things you're taught is when you're walking down the stairs, what are you supposed to do? Hold onto the handrail, yes, and I've never walked downstairs since then in 40 years or not quite. It really -- they do ingrain that whole safety culture into you.

And then you've got the oil refining industry. I'm going to talk -- let's go to the next one. I'm going to talk about an accident at BP Texas City that happened March 25, March 23, 2005, about three years ago. This is a before and after photograph. On the left, probably a security camera. On the left you can see sort of an overview of the parts of the refinery, and on the right you can see the instant after the accident took place and the explosion took place. Let's go to the next one.

This -- what happened here was -- and I realize that people who are in the audience can't see this, but this distillation column overflowed down to here, flowed across here, through pipes, and finished up in this smaller pipe here, overflowed from the smaller pipe down to the ground and exploded.

Now, I don't want to be cynical about this, but in the sort of routine of refinery operations, that would have been an accident that

would have been publicized, and it would have been in the newspapers, maybe be on television. Unfortunately, in this case -- go to the next slide -- unfortunately, in this case, right in the middle of this photograph are the remains of temporary trailers, temporary office trailers. People were working in these offices, contractor employees.

Those trailers were destroyed in this explosion, and as a result of being destroyed, 15 people were killed who were inside the trailers, and that led to our investigation, and it led to a whole ream of issues for BP, which is the large, you know, one of the largest refining companies in the world. This particular refinery is the third largest in the United States, and it was down, shut down for a significant length of time after this. Let's go to the next one.

So what happened, we had the March 23 incident with the multiple fatalities. We started our investigation the next day, and we were going through kind of a routine and normal Chemical Safety Board investigation, which we anticipated would last about a year, a year and a half.

However, during the investigation, two more incidents happened, and we at the Chemical Safety

Board thought about this and said, "There is something wrong with the safety culture at BP that needs to be examined." So we said to ourselves, "Well, how are we going to do that?"

We don't -- you know, the 40 people in Washington can't go and take on an investigation of safety culture at BP. We could hire an outside consultant to do it, but that requires funding, which we probably didn't have, so we decided we would -- we would -- let's go to the next slide.

We would make an urgent recommendation, which is a recommendation that's made before we've finished our investigation. We'd make an urgent recommendation to BP that they examine their own safety culture.

What they did was they went out and hired former Secretary of State James Baker. He pulled together a panel of -- let's go to the next one. He pulled together a panel consisting of experts in refining, experts in safety culture, you know, just a lot of very high-level people, and as a result of that, they published a document in January of 2007, which is this document that I am holding up here, the report of the BP Refinery Independent Safety Review Panel, and if you want to read a good document on the

whole issue of safety culture, this is the one that's really worthwhile, really. It's very, very well done.

So what did they find? Let's go to the next one, and I have listed here no effective process safety leadership. They hadn't established an open, trusting relationship, no resources applied to process safety as opposed to personnel safety. Managers weren't held responsible for process safety and a lack of a unifying safety culture.

Probably the most important finding was an emphasis of personnel safety over process safety, which is probably something that would apply as an -- I don't know as negative issue but as certainly a talking point in the nuclear power industry, as well, the issue of, you know, you can report back and say, "Yes, we've had a terrific safety record. We have no slips, trips, and falls, no lost work day cases, no OSHA reportables," but, you know, the refinery keeps blowing up. That's kind of the differentiating issue that we had here.

Then they made a series of recommendations, and one of them, obviously, is to develop a positive, trusting, and open process safety culture. Okay, let's go to the next one, and these are the elements of a strong safety culture.

Obviously, I think a very important one here -- Commission reliance is here, and showing -- I think the message here comes -- has to come from the top. You can't have an organization where everybody at the middle management level is saying, "Yes, we're terrific. We're really safe," and the people at the top are off doing their own thing and not forcing and not discussing the whole safety culture issue.

Priority of safety over production. I used to run chemical plants, and that was always day-in, day-out a typical issue to deal with. You know, what do you do? Your boss is calling up and saying, "Make more. Make more." You realize that there are some safety issues that have to be taken care of, and if you take care of those, you're not going to make as much as you wanted, and you have to get that balance.

Okay, the one on the bottom I think is very important, as well, the issue of assigning responsibility for safety. It used to be an industry that the people who were responsible for safety were the safety professionals, the safety managers. That is not the case, or it should not be the case anymore. The people responsible for safety should be the production managers, the plant managers, the people on

the lines, the maintenance managers, as opposed to the person who is assigned the job of safety manager.

Okay, so final slide, examples of organizations with a strong safety culture. You can probably leave that until time for the discussion, but it's something for you to think about and to think of corporations, organizations with a strong safety culture, and then think of those with a weak safety culture and what, you know, how did they improve.

Okay. We always ask you to go to our website, csb.gov, where you can see our video, so you can download all of our reports, and I'll be interested in the rest of the morning's discussions and thank you for your attention.

MS. LANDAU: Thank you, Don. Thank you. Thank you. Much food for thought. Our next speaker is Lieutenant Colonel Tracy Dillinger from NASA, and she's a safety culture manager there, and she's on a two-year detail from the Air Force. She recently left the Air Force Safety Center Headquarters as the Chief of the Safety Assessment Division, and she's in Air Force aviation psychology.

In that capacity, Dr. Dillinger developed and instituted the Organizational Safety Assessment Program and the Air Force Culture Assessment Safety

Tool. Dr. Dillinger is a recognized expert in pilot personalities, witness interviewing, and organizational dynamics. She is a member of the International Association of Air Safety Investigators and a member of the Human Factors and Ergonomics Society, Society of Air Force Clinical Psychologists, and the Association of Aviation Psychologists, so, with that, thank you for coming.

MS. DILLINGER: You can't belong to too many organizations. I am really glad to be here. My role has changed not dramatically but in a completely different way, moving from DoD into a government agency, and so I'm going to share with you some of my thinking.

Part of this is what have I seen, and part of it is what is my thinking about the program, especially as NASA now has decided it wants to centralize and institute their efforts in terms of improving safety culture. You all know things about NASA, and I'll talk some more about some of the details about that, but it is a change, and, of course, that's driven at the top from leadership, and that can't happen without that sort of support, so I'm going to tell you a little bit about that. Next.

First, I'll go into some of the intro of

how this all started and philosophically where NASA is now coming from as it looks at safety culture, what are some of the lessons learned. Some of them you've already heard about, but we'll go into a little bit of detail.

Historically, we'll look at what we've done in the Air Force that has become a very effective program and is hopefully continuing with the institutionalization of what we call the OSAs and AFCAST and then looking at where we're going next, what are our possibilities in terms of creating a strong safety culture not just at NASA headquarters here in DC but at the ten NASA science research and flight centers that are around the country. Next.

I'm from the Air Force. I'm still active duty. I'm incognito here as a real person. I have been there for five months. I'm going to be there for another year and a half, and I'm here for you, and by that I mean as a philosophy, and I think working from a philosophy is important.

What's good for me is good for you. What's good for the Air Force is good for DoD and us as a society, and so what's good for one of us is what's good for all of us, and the efforts that we've gone to in terms of improving things, I think it's

good for all of us, and that's why these sort of venues are so important in terms of sharing lessons learned. Next.

Some people get into a semantic debate about culture and about climate, and I've been at places where we can go into long discussions about the differences between the two. So I started first as a clinical psychologist, so it's all about people, so it's all about, you know, people's moods and people's personalities, and I think both of those are important.

It's about the temporary state of the organization and what's happening currently, and it's about the long-term characteristic of the population. Getting to both of those to make improvements and changes are important.

Getting to how you feel right now today is important, but getting to how we all feel long-term, whether we're going to have retirement available and those sorts of things, the larger capacity things are important, as well, so our efforts at NASA are going to focus on addressing the climate aspects, which have to do with current regulations and current guidance and current leadership, as well as the cultural aspects, which have to do more with the values of the

workforce, science, curiosity, going into the unknown. That gets into the risk and risk aversion and issues like that. Next.

What I've seen so far, the fundamentals are really the fundamentals. Whether you look at one model or another model or a third model, good models have the basic same underlying fundamentals like communication. That will always come up, and so we're going to look at little bit at Air Force.

We're going to look at FAA. It's -- most of you probably know in terms of NextGeneration, have looked at five important factors and lessons from the Columbia accident investigation, which is sort of unfortunately one of those accidents that we've all learned a lot from.

And there's lots of ways of doing an assessment. What I can tell you, having developed those programs and having had to look back at those programs and justify them to get funding and to get bodies, is that they work.

They do work, and there's ways of showing the impact, the impact in terms of fiscally and financially, what it saves the organization, the impact people-wise, what it saves in retention and in attracting talent and good people, and for us at NASA,

that's a concern now in terms of attracting and retaining the best and the brightest in engineering and technology. Next.

Air Force does a program called the Organizational Safety Assessment. They are done when a leader requests it. It is not a compliance sort of look. It's not an audit. It's voluntary.

The wing commander requests it. All of the people in the wing take a beloved survey, because they just don't have enough surveys. So when we get to the challenges slide you'll see that, of course, is a challenge, because everybody's tired of those, but they are informative.

We build a team. We do interviews with key players, starting with the leadership all the way down through the organization to the newest and youngest wrench turner or guy or gal on the flight line.

The things that we ask about to get into some of those nuts and bolts in terms of what are the criteria, unit. What's the unit of the organization? How well do people work together? How is communication upward, downward, laterally with my peers? What's the sense of justice in the organization? Do top performers get rewarded? Do

slackers get weeded out?

Flexibility. How well does the organization change when it needs to, and is it changing at appropriate times? Is it overreacting and changing too quickly where people can't come up, but on the other hand, is it remaining stagnant?

So the balance there is what we're looking for, and support. What kind of support are people getting in terms of mentoring and guidance and resourcing, and how well are lessons learned being passed on? Those are the six criteria that in Air Force we look at when we do an organizational safety culture assessment.

Then the team makes recommendations, and at a year point there is a follow-up, including going back and looking at metrics, and by looking at the metrics, we can see that those programs have a dramatic effect compared to the wings that do not do these. Next.

This is our culture tool. Now what happened with OSA's was basically that program became very effective, and lots of people wanted it, and there was no way my one team could get out to all hundred number of wings across the world, so we developed an online survey for all people to take, and

at the request of those commanders, they take just that first portion and do the survey part of that, and then based on the survey, they now select where are we going to go.

It's online. It's at www.AFCAST.org, AFCAST. The Navy has a similar tool. The Army has a similar tool called ARAP. The services about six or seven years ago got together and said, "As we develop these kinds of tools, let's try to do these sort of together. One day they might actually all make us work together.

So the psychologists that were in charge of those things, we got together, and the set of questions are basically the same set of questions, so our hope was eventually when we wanted to compare rotary winged aircraft to fixed winged aircraft, the maintainers or people like that, we could do that inter-service. Next.

This is the kind of feedback that a commander would get. They get a bunch of bars that are divided out into color-coded categories. Those color codes -- the foot stomper here is that those are the categories associated with a high reliability organization or an HRO, which we would all consider ourselves to be, and so the commander can see how they

fall out compared to their own unit, compared to like units, compared to everybody. There's different ways you can sort on it to see how you look.

And then there is a little button that's part of this where they can click on this and get recommendations, so if they're low on a particular item and they get flagged on a --- red flagged on a particular item, they can click on, "Well, what are my options as a commander from a leadership perspective that I can do to change that problem?" Next.

This is part of the results of comparing wings on the organizational assessment. This is where we go out and do the visits, and the top two looks here are basically the looks of wings with all that red, red on different bars, especially the one on the right and the one top right, top left.

These are wings that deploy, wings that are maintaining a continuous presence in theater. That has an impact, of course, on the people, and we can see the differences in our wings that deploy versus our wings that stay more stateside for one reason or another, and that helps to drive some of our recommendations. Next.

So what did we learn from our OSA's? Well, the first thing we found was that we reduced our

Class A mishap rate by 74 percent in our wings that we went and did a thorough, in-depth analysis. That's a lot for a -- that's a lot of money. If you're talking -- for Air Force, we have 25 to 35 Class A a year, over $1 million loss of life, and so for us that was -- that was big.

Thirty-eight percent reduction in Class Bs, 15 in class Cs, 33 in Es, and then in our category where we collect our incidents and sort of those non-reportables where it's up to your safety person to report those, my hope was we would see those go up, because when you're doing a good job in terms of your safety culture, you get more reporting, and people aren't afraid to speak up.

That went up a little bit but not as much as I think it should have, and so that's a continued focus in terms of getting people to report when something's happening, but it is an effective way of making improvements and stopping bad things from happening and doing good prevention. Next.

So, going to NASA, now I'm in a unique position, because I was a member of the Columbia accident investigation, and so I'm one of the people who sort of poked at the organization and was very critical of them for some of the deficits in their

safety program, and then Bryan O'Connor, thank you very much, wonderful man who is the Chief of Safety for NASA, requested that I come to NASA, so just be warned if you're too critical of things what will happen, because now you've got to fix it.

There were five major concerns that came out of the CAIB that some of them have been greatly focused on and greatly improved. Some of them still are continuing concerns, so the first one, inadequate concerns over deviations from unexpected norms, and there was different examples of this, but this is, you know, not unique to NASA.

This is something that happens in many organizations, especially as you get further away from an accident, and when you've been in the lucky position of, "Well, we haven't killed anybody lately," what happens is the focus shifts back to operations, back to operations extensively, and things start to happen in safety like people get cut, and funding gets cut, and new programs get instilled, but not enough safety people are hired to cover that, and so that normalization of deviance as the standard start to kind of lower an, "Oh, we've always done it that way, and we don't need to worry about that so much, because it hasn't hurt us lately," that is a concern in all

organizations.

Silent safety culture, this was a concern then. We've worked on improving that, but this is getting people to speak up. It's not enough to just say it and then have management say, "Thank you very little. Noted."

Bureaucratic accountability. One of the things that happens in some organizations, and I have been in at least two of them that do this, is a bunch of managers and general officer, SES types will sit around a table, and we'll have meetings, and we'll have meetings, and we'll have meetings, and we'll have meetings, and then when something happens, you know, none of those people are really responsible for any of those decisions that got made. It was really some wrench turner or engineer down on the floor, and that's not a good way of doing business.

Schedule pressure, operational pressure, like was mentioned in one of the previous thoughts. Driving to the next node on the international space station was a factor during the CAIB. "Can-do" attitude, and, again, as you get farther away from your last mishap, this starts to happen more. People get very focused operationally. So those were the five top concerns out of the CAIB that had to do with

NASA's culture. Next.

One of the things that also came out of that was General Duane Deal was a CAIB member and published an article called "Beyond the Widget and Lessons Learned about Columbia," and he went around throughout the Air Force talking to commanders about things that they can do to improve their culture, and this is his list of things in terms of sticking to the things that you know work, communicate, being inquisitive, not accepting no as an answer, keeping safety in front, going beyond the technical aspect of things, the operational component.

That's important, and the operational component, in my mind, when safety and operations are working at their best, they're working together, safety as an enhancer to the operations, so they're not separate, and safety isn't a threat to the operations. They really are going to make it happen with more efficiency and a chance for really doing it again in the future, and also doing organizational assessments makes a difference. Next.

FAA has been coordinating an effort in terms of the next generation, and a lot of agencies and people have been involved in putting this together, but the bottom line is out of NextGen has

come a JPDO document that talks about the five aspects of culture -- I'm sorry. I want them to be able to see -- and these are the five aspects of the culture that should make up its strong safety culture.

Reporting. Can people report? Justice, flexibility, learning, inform. You start to see some of the same things over and over again. The trends continue. Next. So we have some information out throughout NASA in terms of what can their safety and operational people be doing to improve themselves and their organizations on those five aspects. Next.

Within NASA there has been a number of looks. It's one of those agencies that has its own internal set of eyes. It also has a number of external set of eyes, and I put those up there just as a placeholder for you.

If you are in that situation, you know, especially with responsibility to the public and to public safety, this is part of how we do business, and so those will continue. They're important. The internal look and the external looks are both important, and where those areas overlap is, of course, where we need to be paying particular attention.

Second from the bottom, the human capital

survey is a organizational look that was done where the HR people worked with some of the safety people to come up with safety culture questions as part of their organizational culture. Two different things here, organizational culture, safety culture, not exactly the same things but should be working together, so there was an effort made to do that. Next.

And out of that, they identified some areas of concern, and let's go to the next one. And out of that, we came to some solutions for the workforce in terms of what management can be doing and what management can be doing that will help improve the culture right now.

This is for the next year. This has gone out in terms of this is what we want you to do. Get out. Walk around. Get to know your people. Give rewards and appreciation, doing it verbally, doing it nonverbally, all those sorts of things, involving people, communicating, and we talk with them about ways of communicating and being creative and thinking outside of the box and encouraging people to do that. Next.

So that's where we are right now. There's a lot of challenges ahead, and they seem to be growing and growing. As an organization, there is great

concern internally of what's going to happen with changes in the administration and politically. That, of course, creates changes within the culture, but those are sort of knowns. We knew that was going to happen.

Meanwhile, things are going to continue. The mission of NASA is space and exploration and getting into the ISS and moon and beyond and Mars and all of that, so we're going to keep doing that, but we're going to address these things in a way where we can still come up with workable solutions for managers and leaders and the workforce so that they do it without hurting each other or hurting themselves or hurting the public. Next.

We started with a round table that at least one person here I know attended last month, and we continue to work in developing our own internal survey. A number of external consultants have come in at different times into NASA and done surveys. We want to post one internally now ourselves.

We are going to look at some of the trend analysis. We are setting up educational seminars. These all happen now in a decentralized way, the ten centers or at Johnson or at Kennedy or at Ames. These happen in a decentralized way at each of those places,

but we want to have some centralized awareness of what's happening and some tools to offer from headquarters to those centers, as well.

We're going to go out and talk to those places. We have quarterly climate and culture teleconferences with our center people, and we are starting an annual symposium specifically on culture and climate. Lots of people are interested in that, you know, all of us here.

Whenever I've gotten an invitation to these, there's lots of people who attend. We're all sort of -- this community is starting to develop over time and really starting to do some networking and cross-talk, and so we want to take advantage of that as an opportunity to continue sharing those lessons learned. Next.

With that, I will sit down and say thanks very much.

MS. LANDAU: That was great and lots of similarities with what we're trying to accomplish here at the NRC. We have technical glitches here. We'll get it, though.

Okay, our final presenter is Tom Valente. He's a Senior Vice President and Chief Safety Officer of Baltimore Gas & Electric, and he has 32 years of

experience with BG&E, including assignments in fossil power plant operations, maintenance and engineering, natural gas distribution, and his current role in operations support. As Chief Safety Officer, he is responsible for the development and effectiveness of BG&E's safety management program, and he's a registered professional engineer. So with that, Tom.

MR. VALENTE: Well, thanks a lot. I'm glad to be here today. I'm going to talk about safety in the natural gas distribution industry and within my own company, as well, and I hope there is maybe something that those of you working here on your internal safety culture might find worth picking up on. If you give me the next slide, please.

The natural gas industry is an important drive of the nation's economy. Natural gas provides about almost a quarter of U.S. energy use. By the way, it also provides about 20 percent -- fuels about 20 percent of electric generation, serves 63 million households, more about that in a little while, because we do have some responsibilities to those stakeholders, as well.

There is a lot of pipeline infrastructure out there. There's about 200 companies that are classified as gas local distributors, local utilities,

but there's actually many more small pipeline operators who are regulated the same way from a safety perspective. Give me the next slide.

In the natural gas distribution industry, we recognize safety roles and responsibilities around three sectors. The first is pipeline safety. That's what the Department of Transportation, a phrase they would use in describing their role in oversight, and it's really about public safety.

It's about keeping the gas in the pipe so that people aren't harmed by releases. It's about maintaining the integrity of the pipeline infrastructure, which goes all the way from design through construction and operations and maintenance. It's got a lot to do with damage prevention. I'm going to talk about that more a little later. That may surprise you.

We also have as gas operators an emergency response role when something does happen out in our system. We act as first responders working with public safety officials, and we're responsible for making those situations safe.

Customer safety. We have some responsibilities behind the meter. Our facilities end at the gas meter outlet, but bad things can happen on

the customer side of that meter, and even though we don't own that equipment and we're not responsible for their appliances, we do have some responsibilities around education and awareness and around providing emergency response, and, again, I'll talk about that a little while.

And finally, we have an employee and contractor safety, which I think the guys that I've been exposed to in the nuclear industry sort of use the phrase "industrial safety" to talk about this, as opposed to nuclear safety, and we play in that sandbox, as well. Give me the next slide, please.

We're in a highly regulated industry. The U.S. Department of Transportation -- you can see the hierarchy there down to the Office of Pipeline Safety -- promulgates safety regulations. There are state agencies that enforce those regulations.

There's also a level of state regulation, and we are subject to active inspection and enforcement, maybe not quite all the way to the resident inspector mode like you guys have, but I can tell you that in our system there's an inspector out there a couple times a week looking at something and checking up on something. I've listed the regulations there. A lot of gas distributors, including us, are

also liquified natural gas operators, and there's a whole separate set of regulations around that.

The last decade has been very active. There's been three major new initiatives, all of which were motivated by specific incidents. The first is operator qualifications starting in 2002 that requires gas operators to qualify their personnel to perform specific tasks on their system.

So, for example, our field employees are qualified, depending on their job classification, specifically qualified to perform between 50 and 100 specific tasks, and we have to be able to document that they've demonstrated that proficiency. In 2004, transmission integrity management regulations came in place -- talk more about that in a little while -- and distribution integrity management regulations are expected this year, and in a little while I'll highlight some interesting differences between those two programs.

Pipelines are the safest transportation sector that the Department of Transportation regulates. You can see the fatality stats from 2006, and I think that's impressive that a quarter of the nation's energy is transported, at least in the natural gas side, with this kind of safety record, and

these stats also include liquid and petroleum pipeline stats, as well.

You compare this to about, you know, 90 to 100 people die of insect bites in the United States every year. There's about 50 deaths a year from lightning and 12 or so due to snake bites, but 19 is still way too many, and that's why we're still in an era of rapid regulatory development.

The natural gas distribution industry is on a somewhat improving trend in pipeline safety. You know, it's too much for you to read that on the screen, but the second line for the -- from the top actually shows the serious incidents that occur in distribution as opposed to other forms of pipelines, and you can see the distribution industry being closer to more people, closer to the customer, does have more serious incidents, so there's still lots of work to do.

From an industrial safety point of view, the natural gas industry, distribution industry is kind of similar to other utility industry sectors except nuclear. That's just a startling and impressive industrial safety record in the nuclear industry, and you can see the numbers up there, and I thought it was kind of interesting that --

And, frankly, I had never even looked at this across industries before, but gas distribution down at the bottom of an average OSHA rate of 4.7 is almost, you know, just slightly above all industry and a little less than construction, very similar in the electric transmission and distribution industry, and that kind of aligns with my personal observation, too.

So I'm going to talk about the safety environment, the culture, the challenges we face in these different sectors. In the public and pipeline safety area, one of the real challenges is that our assets and our facilities are dispersed in an uncontrolled environment, so my company has over 6,000 miles of pipeline out there, and it's not on our property. It's not within our fence.

Our meter regulator installations are in somebody's house or outside of somebody's house, and we don't control that whole environment. That was pretty startling for me personally when I moved from the fossil power generation world to the natural gas world that, oh, my God, we're in somebody's private home here, as opposed to being inside the fence. We operate long-lived assets, and that places some challenges, because many of us operate facilities that have been in place a long time, made from what I would

call legacy materials that are no longer considered acceptable for new construction.

The industry is going through a little angst over, you know, how prescriptive should regulations be versus how risk-based. The traditional regulation we've operated under is kind of a mixture of some very specific prescriptive requirements to perform certain kinds of inspections or tests at certain intervals and report them all the way to some general performance requirements like, you know, "Thou shalt provide emergency response," and this is really coming out into play in some newer regulations where the transmission integrity management program is extremely prescriptive.

It prescribes methods to be used, intervals, very prescriptive, whereas in the coming distribution integrity management program, it'll be a much more risk-based approach where the operator is going to be required to demonstrate that they understand the condition of their system, the risks it represents, and they're managing those risks.

I'm going to talk for a minute about the kind of gas pipeline incidents that occur, the little pie charts there. I mentioned damage prevention. More than a third of reportable pipeline incidents are

caused by somebody else digging into the pipe, and, trust me, that always happens on Friday afternoon. Been there, done that, got the t-shirt.

Something else that's kind of hidden from view here that's very interesting is in the 32 percent that shows there as all other causes, the vast majority of them are what we call fire first incidents, where something happens inside a building, a fire, which may or may not have involved natural gas to begin with, or an explosion, and in the course of that event, with building collapse or fire and heat or whatnot, the pipeline operator's equipment, usually the meter, gets damaged, and gas is released.

Once that happens, it's our incident, as well. So the industry does a pretty good job of managing the things under its direct control, but we have a lot of responsibility around these things that happen to our system. Next slide, please.

Customer safety, I think, is kind of a unique responsibility. I mean, imagine that you would have some responsibility for safety on things you don't own, you don't control, but yet we do, but our responsibilities are kind of limited. The first is to provide public awareness and education so that we're responsible for making sure that the users of our

product can identify a hazard, understand what the hazards are, and know who to call and what to do.

We also have a responsibility to -- I use the phrase "respond and make safe," so if you smell gas in your kitchen and you pick up the phone and call your local gas company, from the minute you make that call your local gas company is on the hook to respond to that, to get there, to assess the situation, to advise you, and to make it safe.

Usually that just is as simple as figuring out where the problem is, tagging out an appliance, shutting off the gas, not necessarily making repairs, but that's a pretty important responsibility, and when we do that, our employees make public and customer safety decisions on the spot. You know, they're responsible for determining if a leak needs to be handled as an emergency or can be scheduled for repair, whether folks have to stay or evacuate.

I thought it was interesting that John showed the picture of the convenience store that exploded due to a propane leak. Well, had that been supplied by a pipeline operator, you know, their employees would have been responsible for making sure that folks were evacuated and kept safe. Next slide, please.

In employee and contractor safety, some of the challenges we face work in an uncontrolled environment. Again, our facilities are out there. They're not within the fence, not on our own property, a lot of outdoor exposure. You can see some of the pictures. Folks are out in all kinds of weather, all kinds of environmental conditions.

Customer premises are very unsafe places, and some of this seems kind of mundane, but we get a lot of people hurt with things like folks going down basement stairs in old buildings in the city and the stairs collapse, tripping over things in the building. Bad dogs are a huge issue. Our company has had so far this year, I think, six OSHA reportables due to dog bites.

Driving is a huge issue for us, and that's something that you might want to think about in your internal safety culture, as well, for your employees. Motor vehicle accidents are the number one cause of workplace fatalities. In our industry, we drive a lot.

Our company is kind of a medium-sized gas and electric utility. We're not especially big, but we have a fleet of about 1,200 vehicles, and we drive about six million miles a year, so there's a lot of

exposure there.

Specific job hazard exposures that kind of play into the natural gas industry, obviously excavation. We're working underground. Work zone safety. You know, you see all the barrels, the cones, the signs, the flaggers. We do that, too, and that's pretty scary sometimes.

Live gas operations. There are times when we need to work jobs live, and we have special procedures to do that, and we operate with kind of an emergency response mind set. We are first responders, and there's times when you're out there, and there is this scene of mayhem, and the fire department, the police are there.

The lights are flashing. The news choppers are flying overhead, and it's important to keep people focused on slowing down, taking their time, not getting too into the excitement of that moment.

A little bit our company specifically. We're a medium-sized gas and electric distribution company. We no longer have generation. That's in our unregulated affiliates. We're an affiliate of Constellation Energy, so if you Google us you'll see about 1,000 newspaper ads today, since nobody can

decide who's going to own us.

We have about 3,300 employees. You can see our stats. We're kind of a medium-sized company, so I'm going to talk a little bit about some things we do especially that are unique to us and our situation. Take me to the next slide. Go back one, please.

Between our infrastructure and customer safety, we are an older utility. Our history goes back almost 200 years, and we have a lot of older materials that we have to deal with. What we try to do is our company tries to be an early adopter and participate in the regulatory development process. We try to help shape that. We try to give ourselves as much time to take the time to do our compliance right.

We are a fairly early adopter of a risk management-based approach. We use a commercially available tool called Optima in that divides our system up into thousands of segments, and we have 30 years of maintenance history that helps drive a risk score for all of those.

We use a lot of metrics and performance goals for safety-related work, and in emergency response area we have a lot of procedures, training, and we do a lot of drills. We sort of inherited that from our electric brethren, who are in that mode.

In the employee and contractor safety, well, we face the same environment out there everybody else does. We keep talking a lot about the aging workforce, and personally I get a little irritated when I'm in a meeting and folks start talking about the aging workforce, and they turn around and look at me. I don't like that, but it's a fact.

We operate in a very difficult driving environment. Those of you who live in the Baltimore-Washington area, I need say no more. I think our biggest challenge is initialize -- institutionalizing some of the initiatives, some of the processes and safety management tools we put in place. I'll talk about that in a moment.

You know, here's a whole laundry list of things that we do. We're in the third year of a program at our company to try to put in a whole new infrastructure of safety management programs. The things I've listed, they're all just standard stuff that everybody in safety management does.

We're trying to do this centrally. We're trying to have single consistent process for all these things that we'll use across the company. You can see what they are. The real challenge is -- it's fine to get a team and a conference room. We can create flow

charts. We can create forms.

We can train people, but how do you get -- we have 1,600 field people. They work in ones, twos, and threes, scattered over hundreds of square miles. They're on their own. They're not under close supervision. How do you get them to fully embrace and fully understand how to use all these things? Huge challenge.

Just a couple of things I'll comment on within some of these initiatives that maybe -- first of all, your Safety Culture Task Force, you may want to look at a laundry list like this and ask yourself how many things like this could apply to your employees in their daily lives and work, and that includes office people, as well.

I'm going to talk about incident investigation. I've shown incident investigation and what we call Level 1 Near Miss Program. They're really part of the same thing. Others have talked about incident investigation, and we have a four-level process, and they all get investigated, so we investigate hundreds and hundreds of incidents a year. Most of them do not result in injury.

That investigation may take five minutes. It may take two months, and we have a process and a

procedure to elevate them in accordance with four levels, and the level doesn't depend only on whether somebody got hurt or not. We recently initiated a Level 3, the second highest investigation, on an incident that occurred a couple weeks ago where no one was hurt, but it had tremendous potential.

We're also taking a harder look at training, evaluation, and qualification. I talked about the regulatory requirements for operator qualification, but there's a lot of things we do in the electric distribution side that aren't subject to that kind of regulation, and we're taking a look at just how to do that to ensure safety by doing a more specific job of evaluating folks' ability to do safety-related tasks.

As a coming attraction, we're starting to talk to the folks in the nuclear operating company, one of our sister companies, about embracing human performance tools, language, techniques. What we've found is that we already use some of those things, and we even use some similar language, but we've never systematized that, trained on it, or embraced that.

So I hope there's something that you guys can take out of this, and my contact information is here if any of you would like to talk to me privately.

MS. LANDAU: Thank you. That was great. Okay, we're actually ahead of our agenda, which is astounding, and that's really a good thing. I think we're having audio difficulties with the people on the webinar.

Would the best thing to do, take a break a little early? Okay. Why don't we break and reconvene at about 10:20? That should give us some time to work things out, and we can start our Q&A a little bit early, so we'll reconvene at 10:20.

(Whereupon, the above-entitled matter went off the record at 9:58 a.m. and resumed at 10:21 a.m.)

MS. LANDAU: I think we have worked out our audio issues. For those of you who are on the webinar, I hope you can hear me. We worked on reestablishing a new conference bridge one, which I hope you called into.

What we're going to do now is try to make this as efficient as possible. I'm going to ask for questions from the room for those here physically first, take those questions, and then we'll go ahead to the webinar folks. If you guys wouldn't mind emailing in your questions, there's a little box at the side of your PC screen where you can just email your questions to us, and then we'll try to take them

that way so that we don't have fights over the audio bridge line, because that's normally not the way that we would handle it during the webinar, but unfortunately we had some audio difficulties this morning.

So hopefully that will solve all the problems, and then, if not, there is a email address that you can see on the screen right now, and what we'd like to ask you to do is after the meeting, send us your comments, your questions. Anything that was not resolved during the meeting, we'll be glad to follow up with you on, and also, if you want to give us your email address, we will send you the link where we're going to be posting all the documents related to the meeting, the transcript, the recording, the presentation material, and so forth, so this is the email address you want to use for all that material, okay.

And with that, I'll open it up. Marty, did you have any questions to start us off?

MR. VIRGILIO: Thank you very much, Mindy. I did have a question for Tracy Dillinger. Tracy, in your presentation you talked about the surveys, and you talked about how --

MS. LANDAU: Hold on. For those of you on

the bridge, just hold on. We'll get to you in a minute, and we're going to ask that you email in your questions rather than talk, but could you mute your phones so that we don't hear it here in the room? Excuse me. We can hear you. Can you mute your phones? Thank you.

MR. VIRGILIO: Thanks, Mindy. So, Tracy, the question is, as a feature of the surveys you talked about the possibility of asking for recommendations to fix some of the issues that were identified.

MS. DILLINGER: Right.

MR. VIRGILIO: Could you talk to us a little bit more about how that works?

MS. DILLINGER: Yes.

MR. VIRGILIO: Who provides the recommendations?

MS. DILLINGER: Yes.

MR. VIRGILIO: Thank you.

MS. DILLINGER: So say, for example, there is a set of 60 questions, and there are certain parameters that are established in terms of what's good, what's fair, what's bad. So when someone flags -- when they look bad on a question, for each question we have recommendations in terms of like, you know,

encouraging reporting, say, of incidences or in terms of knowing who your safety person is or those sorts of things.

We have a set of recommendations that goes with each of the questions, so the commanders are the ones who have the capacity to look down into their results, and when they see their results and they are low on questions, they can go to that button and start looking at what are their recommendations. That's based on inputs as we developed the survey. That's based on the academic sorts of things.

It's also based on feedback from previous commanders who have had problems with that issue, and part of their survey process is that they get to go in and make recommendations, too, for the next one, and so the recommendations list over time is getting larger and larger, and some of it is based on theory. Some of it is based on experience.

MR. VIRGILIO: Okay. Thank you.

MS. LANDAU: Thank you. Are there any other questions from people in the room? Yes?

QUESTIONER: Yes, I would like to have a little bit of a discussion among the panelists if I could about the issue of consensus. I think in the context of the work that you're doing and the history

of the agency that the issue of groups within your different organizations, within the NRC reaching consensus on sometimes controversial but certainly important safety decisions are usually not reached by one person.

They're usually reached at a group level, and the issue of reaching consensus, of course, was controversial in the context of the Davis-Besse decision, but it also played a critical role in the NASA decisions that ultimately were examined pretty heavily following the two tragedies at NASA, and I think in order to really make sure that we have -- that we as members of the public have a sense of confidence that things are changing at the NRC that I understand and that we understand how you're going to make sure that people really do have the free flow of information that you would expect of your licensees, that the public would expect in any kind of risk-based decision and that dissenting views get heard, which is a completely different question than we have, you know, a DPO or a differing professional opinion process. I want to make sure that you guys have thought that through and that -- or that is being thought through in the context of the work you're doing.

MS. LANDAU: I'm sorry. I didn't ask for your name. I should have.

QUESTIONER: Billie Garr.

MS. LANDAU: Billie, and you're with?

QUESTIONER: Myself.

MS. LANDAU: Yourself. That's good. Okay, did Marty or Doug, would you like to address that?

MR. COE: Well, I would just say I think that that's a very good question. It's something, this idea of differing views and the ability to express them is clearly something that is of interest to the Task force.

How we can improve the environment to accommodate, you know, a more free expression of views is certainly something that we're looking at, and as you perhaps would be willing -- would be interested in hearing the panelists, as well. Thank you.

MS. LANDAU: Anybody have anything to add?

MR. LOCHBAUM: Yes, just briefly. You mentioned the Davis-Besse example, and if you go back, as I did, and looked at that event both at the utility level, the plant owner's level, and the NRC's level, there were paper trails in both the decision-making things. It was a more extensive paper trail at the utility level as to why they did things or when they

didn't do things. It was very well documented.

The NRC side, the paper trail, they used paper, but the decisions weren't documented as well, and I think it's important to -- it's part of the communication point that I made earlier. It's important to document decisions that are made and also why you didn't make certain decisions.

The NRC requires utilities to document decisions ad nauseam. I mean, there's -- it's a -- there's a lot of paper. You can know why somebody did something, who did it, who authorized it, why it was done, what factors were considered in reaching that decision, so I think that tends to be more inclusive and include the right people in the decision-making, because you're putting your name at the bottom line, and that generally instills more discipline than if it's not.

The NRC's process was document, but it was -- it's a different -- like an order or magnitude different, and I think it's important for the NRC to more fully emulate what they require licensees to do in documenting regulatory decisions or regulatory non-decisions if you're not going to do something, because that, first of all, instills a higher level of accountability, and it generally requires you to put

down on paper your factors that went into your decision, including the dissenting views and why all these things were raised. You decided that they -- in the end of the day they weren't weighted as high as other factors.

QUESTIONER: Well, do you think if you put in, for example, the utilities green sheet process in the context of certain risk-making decisions that that would actually encourage people to raise the issues? Because I'm actually less concerned about documenting what happened as well as getting to making sure the debate itself --

I mean, both NASA and the NRC want to be able to say for those high risk, potential high risk decisions, that it was a consensus of the group that was there, and I think tools in place may advance that debate. I don't want to see that.

I'm just worried, and I haven't really thought this through. I really want to just hear a discussion about it, whether or not that level of personal accountability will get people to speak up as opposed to waiting for the decision to be made, then saying, "I told you so" when something bad happens. I'd like to see the debate in the room.

MR. LOCHBAUM: I don't think it's a --

neither one of those is a hundred percent guarantee, but I was working at the Grand Gulf Nuclear Plant when they changed to the green sheet type approach, and when I start having to put my initials out in the margins of information that was going to the NRC, knowing that if it was wrong, everybody in the world knew who had just lied to the NRC, that made it very --

I went to the -- I went to the people that worked for me to make sure that the information that was there was as solidly scrubbed as possible, because I didn't want anybody ever to come back and question why I'd signed that, so, again, it wasn't an absolute guarantee, but there was a huge change in the work that was done by myself and others to make sure that that information was right, including finding out people within my group that were critical, because if they had the right answer and I'm signing off to the wrong answer, they are the first person that's going to turn me in if that day arrives.

So I want to check those people. I think other people in the organization did the same thing, because they didn't want, you know, their initials to come up on that bad day, either.

MS. LANDAU: Any other interest in the

panelists, discussions back and forth? If not, okay, good discussion. Can we open it up to anybody else that has a question? Yes?

MR. ROSS: James Ross with GE Hitachi.

MS. LANDAU: GE Hitachi. Okay, thank you.

MR. ROSS: My question is for John from the Chemical Safety Board.

MS. LANDAU: Would you stand up so we could all hear you better?

MR. ROSS: John, I think I heard you say during your presentation that you had 40 employees, the Chemical Safety Board. I was just wondering is that an efficient number of resources to conduct a business of investigating the type of accidents and the number of accidents that you investigate? I mean, if it is, how do you use that small number of people to do the amount of work that you have to do?

MR. BRESLAND: That almost seems like a rhetorical question. I think you know what your answer would be to that question, but the reality is that we're funded by Congress, and our budget is $9.2 million a year. Hopefully -- and we're in the continuing resolution right now, as everybody else in the federal government is, so hopefully whenever that breaks free we'll get some more money next year.

We are in the -- one of the issues that we've found is it's difficult to hire chemical engineers, mechanical engineers to work in Washington. I don't -- it may not be the same here at NRC, being a much bigger organization. So we're opening up an office in Denver right now. We're in the process of hiring people there.

In a perfect world, I think to answer your question, we would like to have more people, definitely, and I always remember doing a presentation kind of similar to this to the Chevron refinery out in El Segundo, California, about a year ago, and the refinery manager, who was -- he wasn't, you know, a screaming liberal, as you can imagine, for a typical refinery manager.

He said that the work we were doing was the best value for taxpayers' dollars of anything that he had seen. So I think -- I was just thinking on a unit of work per dollar or unit of value per dollar, I think we do a pretty good job.

MR. ROSS: I guess the second part of my question was what processes, what ways have you discovered to be able to make that process so efficient? I think that's what I wanted to have shared with people, and that's what I think that we --

MR. BRESLAND: Well, I don't think we're as efficient as I would like us to be. I think we do take longer to do an investigation than I would like, but sometimes it's beyond our control. We go out and request documents. We do interviews. Lawyers get involved, and that tends to slow things down, but we would like to be able to do our investigations faster, but what process do we use?

You know, I think one of the most difficult decisions that we make in our business, I mean, the Chemical Safety Board's business, is the decision which accident should we investigate, because we investigate today's sort of medium-sized accident, and we send the resources out, and that ties up those resources, because once you get in, you can't back out again. You can't say, "Well, we've changed our mind."

Once we get in, those resources are tied up for about a year, and two weeks later, the big refinery or the big chemical plant accident occurs, and we struggle to get the people to go and do that investigation, as well, so it's a very -- it requires a lot of discussion among ourselves when the accidents occur as to whether this is something that we should investigate or should we leave it. Some are very obvious, but some are not quite as obvious. Thank

you.

MS. LANDAU: Thank you. Any other questions? Yes?

MR. BARTLETT: There is a question from the panel, from the online -- from Richard Lagdon, which says, "Could the panel comment on their views on whether they believe regulation of safety culture can be achieved?"

MS. LANDAU: Tracy, you want to start off?

MS. DILLINGER: Well, you know, anything is possible. I think -- I think it can be achieved, but I think it requires some things that we need to work on. There needs to be top level interest and advocacy, not just support but actually getting involved in making that happen, and it needs to be -- and if that's not there, it's not going to happen.

MS. LANDAU: Anybody else?

MR. VALENTE: I don't think it -- you can't just mandate what's going on inside of people's heads and how they behave every day, so that extent I don't know that you can get to a safety culture strictly by regulation, but regulations do have an influence on the say an organization operates and the expectations they have for their people, and that influence will impact culture over time. There's no question about

it, and I think you see that in some of the industries we've talked about today, those that are more highly regulated. That's why we're here.

MS. LANDAU: Anybody else care to comment? That was Tracy Dillinger and Tom Valente, by the way, for the people on the webinar.

MR. BRESLAND: I think safety culture can be measured. You can go in and do a survey of the safety culture starting at the top and working our way down through the organization. Whether you can then sit down and write a regulation that would go into the Federal Register and be approved could be a -- it would be a -- I'm not sure if there's any organization or any agency that has the expertise to do that within the government, maybe the Air Force or maybe NRC. I don't think so. It would be difficult to do.

MS. LANDAU: Any other questions? Any questions? Yes, sir?

MR. MARTIN: Chip Martin from the Defense Nuclear Facility Safety Board. I was actually at the RIC conference when David made his comment about or question about the -- and I thought it was right on target, and I had a sense that what motivated your question at the time was that the Davis-Besse event and the Millstone problems, it seemed that there was

perhaps too much familiarity between the NRC staff and the regulatees that caused them to maybe be less vigorous than they should be in their investigations, perhaps tolerating deviations, perhaps too frequent approvals of requests for dispensation from regulatory requirements, those kinds of things. Has there been any attempt to do lessons learned for those kinds of events, root cause analysis to try to determine how the NRC staff can more effectively execute their oversight mission?

MR. COE: I'll take a stab at that. For those of you who don't know me, I'm Doug Coe. I didn't get a chance to meet everybody coming in today, and I'm leading the task force on internal safety cultures, and it's a good question.

Of course, you are probably aware that after Davis-Besse there was a very extensive lessons learned task force that was mounted and rendered a significant set of recommendations, many of which I think, you know, touch on some fundamental issues, and I can't recall on whether they touch on the specific ones that you're talking about but certainly the awareness of the need for objectivity in terms of the familiarity that you mentioned. I think that's kind of something that has been stressed and is being

continued to be stressed, I know, at our field offices and our regional offices and also with our technical staff that deal with licensees.

You know, the question of tolerating deviations, I think this is a point that David has made before regarding -- in reference to some of the underlying issues at NASA, and it's a good one to conceptualize and keep in mind. You know, again, we're looking for ways, I think, of expressing these things and communicate them so that they stay relevant in everyone's current thinking and so that goes back to communication, too, essentially.

And so I guess the general answer to your question is all of the points you made are relevant to the task force's work, and we are thinking about them. Thank you.

MS. LANDAU: Any other questions from the audience? Yes?

MR. PERSEVSKY: I'm Jay Persevsky. I'm from the NRC staff. I have a question for you, Tracy, because you mentioned that you're developing an internal safety culture survey for NASA because you had looked at some commercial surveys or consultants had come in. What was your motivation in deciding to do your own?

MS. DILLINGER: Well, you know, the agency is in the model of using contractors to a large extent, and that works very well in terms of getting technical expertise, but it doesn't work well in terms of developing programmatically, bench marking and then comparisons and trend analysis, and so for any sort of continuity in terms of who owns the data, you know, who has access to it, how do we look at it, that really needs to be done by the agency, because the next contractor is going to come in and do their own look, and the next person will come in and do their own look. So, in the interests of continuity, there is a desire to have some ownership over that information.

MR. PERSEVSKY: What about the content of the surveys? I understand the ownership of the data after you do it.

MS. DILLINGER: Right.

MR. PERSEVSKY: But in terms of the kinds of questions you're asking or the -- was there something that you felt you could do better in-house?

MS. DILLINGER: In some ways, although that wasn't the primary driver, because the surveys are very similar. If you look at -- you know, there's different organizations out there. There's Futon.

There's VST. You know, there's a number of different agencies. There's the National Safety Council. There are -- many surveys exist, and in many ways they're, you know, 80 percent similar, maybe 90, maybe 70, you know, whatever, so I think the similarities in terms of the fundamental areas that they cover are the same.

There is some hope expressed by people internal to NASA that there will be sort of NASA-specific questions, and so we intend to do that, and there is hope that we have specific questions for each of the centers, because the centers are very different. So we will sort of modify them in certain ways, but the primary reason was to have more awareness from the executive level in terms of being able to understand what was happening in the culture.

MS. LANDAU: Yes?

MS. SNYDER: Hi, I'm Amy Snyder from the NRC. I have a question for Dr. Dillinger. I believe she said in her presentation that the fundamentals of safety culture are lessons learned. There were -- she mentioned the six pillars of the U.S. Air Force, five factors from NextGeneration, and five lessons learned from the Columbia accident investigation. I believe you said that those work, those fundamentals work, and my question is how do you know that the result, the

increase of safety is due to the safety culture program or fundamentals, as opposed to something else?

MS. DILLINGER: By looking at what the something else is that's happening in those other organizations, so for organizations that are similar in nature with the similar factors that are going on, that's where -- that's where we looked. I mean, we know that the wings that we looked at in the Air Force, each one is sort of unique in its own way, but they have similar or sister wings that are doing the same sorts of things that are having more problems in safety, in their safety statistics.

MS. SNYDER: So you look at a discriminator if there's anything other -- other things that are going on that could be attributed to the result of increased safety?

MS. DILLINGER: I'm not sure if I'm tracking exactly with you, but I think in terms of the OSA program where we did the five-year look, where we looked at all of the OSAs we did over a five-year period of time, there was thought that was put into what was happening in those organizations operationally, for example, wings that are deploying or, for example, wings that are closing due to BRAC closures or things like that and trying to get like --

to have comparisons of other kinds of organizations.

For example, we know the mishap rate itself across the Air Force has not gone dramatically over the last five years, and so when the rate itself is going up, but the wings that were having the OSAs are going down, we knew that that was important.

MS. SNYDER: So would you say it's important to look at your comparison between organizations to come to a conclusion about increased safety due to safety culture programs?

MS. DILLINGER: I think it's one of the things that's important. It doesn't capture everything, but I think it is important to be able to demonstrate the effectiveness of the programs, and it's important for the future of the program. It's important in terms of getting resources and getting funding and getting people to -- and the right kind of people to do the programs, and the tie-in for me is when I can show the program is effective and is a mission enhancer, where it's, you know, the more pilots that we save and the more airplanes that we save.

It's not just the safety things. It increases our combat capability, and we need those guys for the war, and when we can show that it does

that, then we get support from the higher levels where we need support for the program.

MS. SNYDER: Thank you. One follow-on question. You said that the assessments have shown -- you had a slide about how things have improved. Is that because of the assessment, or was that because of the assessment and then the follow-on action by the commanders to decide how to -- you know, what they were going to be implementing, because I got the impression that you were just talking about doing this assessment would be the -- would do the trick.

MS. DILLINGER: Well, you know, there's a couple of different thoughts that have run through my mind about that, and it's not just the assessment, but part of the assessment is there is a whole set of recommendations that the assessment concludes with, and the commanders have dealt with this in various ways.

Some commanders have their higher level staff that that's a project for them. Some of them appoint Tiger teams. Some of them work it into their other ongoing ways that they address their issues. Some of them have done not as much as others, and it sort of depends, but I think --

So I think there's an effect to the

assessment process. I think there is an effect that the commanders who request them are -- this is a voluntary thing, and they tend to be more proactive and more willing to listen and more willing to adjust the way they do things and more willing to implement changes and recommendations.

I also think there is an effect, though, of doing the assessment, a sort of Hawthorne effect in the sense that by increasing everybody's awareness, you know, I mean, you have to sit and take a survey. You have to sit down with the interview and spend, you know, an hour and a half about how you feel about things, and, you know, different people on the staff have to sit through the in-brief and the out-brief and hear all those sorts of things, and just the process of everybody going through that, I think it heightens awareness.

I think hopefully it increases communication and people start using some of the same words and talking with each other about that, and so one of the effects is something, and I haven't measured this, but I think that effect is there. I think it lasts for about a year to 18 months.

MS. LANDAU: We have some questions from the webinar folks.

MR. BARTLETT: Yes, Wanda Alderson would like to ask, "What plans does the NRC have in the area of safety to communicate more effectively with the public in regions surrounding nuclear plants, specifically notification of events?" Then there is a follow-on. "Also, how is the NRC considering input from the public to make changes in safety standards?"

MR. COE: I'll just mention for the record, I guess, that the notification of events to the public and the other question related to the process that we go through that involves the public in our regulatory decision making for, you know, establishing rules and standards are really outside of the scope of the Internal Safety Culture Task Force.

From the standpoint of improving our external processes, I mean, that's -- I mean, there is a nexus, I suppose, to internal safety culture, because it's the people in the NRC that actually implement those processes, but the actual processes themselves are not part of our focus. Our focus is more internal, internal processes and communication.

So that's a non-answer, but if there are -- I would add that if there are specific questions about how we, you know, manage our processes out, you know, to the public in terms of our communication, if

you could send those in to our email address, we will try to get them to the right people that can answer those. Thank you.

MS. LANDAU: We'll put that email address up on the screen for you again. Are there other questions from the webinar, Matt?

MR. BARTLETT: There are none.

MS. LANDAU: No more questions?

MR. LOCHBAUM: Could I add on to Doug's?

MS. LANDAU: Sure.

MR. LOCHBAUM: The NRC recently, within the last four to six weeks, instituted a new program where individuals in the public can sign up for a list serve to get information about specific dockets. We think that's been a good thing. Some of the people we work with across the country have found that very useful, so it contains some event information but some other information as well as the license amendment changes and so on, so I encourage people that are interested to try out that and see if that works for their needs.

MS. LANDAU: I think we're going to be expanding that, as well, to other stakeholder groups, so that'll be something to look forward to. Yes?

MR. PERSEVSKY: Jay Persevsky again. A number of you mentioned that you're not safety culture

experts, but you said that there have been safety culture experts on panels, et cetera. What is it that makes someone a safety culture expert, in your view?

MR. LOCHBAUM: Self-labeling.

MR. PERSEVSKY: Self-labeling?

MS. LANDAU: Anybody else have any point of view? I guess it would be by virtue of experience in the, you know, the material over the years and your involvement in issues that, you know, related to safety culture to me.

MR. PERSEVSKY: Can I do a follow-up, then, in terms of -- especially for the Chemical Safety Board. You're the ones doing -- out doing the investigations. When you do investigations, I assume you look into the issue of safety culture.

MR. BRESLAND: Not necessarily. You know, we tend to look into the, you know, the root cause of what happened, and if safety culture appears to be an issue, we'll look into it, but again, we don't have the -- we don't have the expertise. We'd have to hire Tracy to come help us do that.

MR. PERSEVSKY: So your investigators wouldn't be considered to have expertise in safety culture?

MR. BRESLAND: Not in an academic sense but

more in a kind of a practical sense. You go to a facility. I can think of some examples. I think -- did I show a photograph of a chlorine release up here? I went to that facility, and I realized that it had problems based on our investigation, and those problems could be related to a safety culture but also related to just not doing things the right way. Is that -- is that an aspect of safety culture? I would assume that it is.

MS. DILLINGER: I can speak a little to that, at least in Air Force and probably DoD. The way we do our investigations is such that on our Class A investigations there is a medical person, and often there is a human factors investigator, and having been, for me, as the human factors investigator for about ten years at Air Force, what ended up happening was as we were doing our human factors look, safety culture is part of that.

And so, for example, when we have a fatality and it's out-briefed at the Pentagon at the four-star level, a number of years ago we had a wing commander who said, "If only I'd known that was going on in my wing, of course I would have done something about that."

And that is what drove the development of

the OSA program, where we started to say, "Well, rather than just going in and doing the investigation and finding out what the poor, guilty guy did at the very tail end of this whole trail of errors, what can we identify beforehand that people can act on?" and for us that was where we started shifting to look more at the cultural aspects and getting the information out.

So for us it's more in the medical community in terms of the physiologist, the psychologist, the flight surgeons, and our "human factors" people, who now are the ones more involved with culture, although in our safety offices they fall into that category, as well.

MR. VALENTE: When we do -- when we do an incident investigation, part of our process is we try to drive to what we call systemic failures, so if you just stop at the level of the decisions and the actions that people took, you know, you're nowhere near done, but to look at what are the things in your management practice and the acceptable behaviors in the organization, those are what the systemic failures are.

So, you know, it's sort of an amateur effort. I can't say we bring in the PhD's to do this,

but we try to peel down to that level as best we can, and that's where culture is, right, where people behave and what practices are acceptable.

MS. DILLINGER: It also depends on your organizational modeling in terms of how you investigate your accidents, so for organizations that use models like HFACs, you know, where that is a way of approaching your investigation and there are certain areas that you would look into, safety culture is part of the FACS model, and so for places that use that, they will get to safety culture. Their investigators will as part of that investigation.

MS. LANDAU: What is HFACs?

MS. DILLINGER: Human Factors Analysis and Classification System, HFACs. If you Google on that, you'll find all kinds of stuff about it.

MR. COE: And if I may just tag on to that, there are, obviously, a lot of organizational models, organizational culture models. Academically, I mean, you can find probably hundreds out there, and they keep coming out as time goes on, so we're -- we have access to some of these.

We're looking at some of these, and we value some of these kinds of comments. I think it's the nature of this business that you have to expect

this kind of ongoing dialogue over time, and so getting to the really fundamental aspects, and I think you noted that, as well, in your presentation, is what we're trying to do, as well, so I appreciate those comments.

MS. LANDAU: Great. Thank you. Anybody else? Yes?

MR. MARTIN: Chip Martin again. I was wondering --

MS. LANDAU: Get you next, Cynthia.

MR. MARTIN: I was wondering if -- I know you're working on a policy statement for safety culture outward directed. Is there an effort to do something similar for the internal safety culture project, because safety culture as I understand it really is driven from the top, and if it doesn't start at the top and get care and feeding from the very top, then it all falls apart at some level. So is there an effort to do that?

MR. COE: That's a very good question, and thank you for asking it. We have members of our task force that are participating in the external safety culture policy statement development, and so we have access to the work that they're doing, and it is, in fact, you know, something that's relevant.

In the broader sense, the way I would characterize it is that currently the NRC has a number of high level statements, you know, such as a mission statement, a strategic goals statement, a strategic plan that encompasses some additional articulation of our values. We have a set of organizational values. We have five principles of good regulation that was actually authored by the Commission back in the early 1990s.

So the broader question for the task force really is is this the right set of high level communications sanctioned by the Commission, and to some extent, actually, this was a question that I was going to ask the panel myself, because there is a value, I think, that we have seen in having the development of values, for instance, a set of value statements from the working level, from the employee level, and having that feed up into being sanctioned at the upper levels and becoming essentially the, you know, internalized amongst the entire organization.

There is also, as you point out, the need for top level down direction and articulation of what the values are, so, in short, the short answer is yes, this is part, very much a part of what the task force is looking at, and we have a number of things that

we're working with to start with, and we have access to the work that's being done on the external side, and it's important to know if we're going to deviate from what's being done on the external side, we know clearly why, because another important point is that our licensees have a different organizational structure and mission than we do.

Safety is a commonality, but it's implemented differently, and so you have to be careful when you take something that works well in one organization and transpose it into another, and we've heard lots of stories about how those things don't always work, so we're very sensitive to that.

MS. CARPENTER: Can I -- I want to add on to what Doug just said, that the primary members, the full-time members --

MS. LANDAU: Did you introduce yourself, Cynthia?

MS. CARPENTER: Oh, I'm sorry. I'm Cindi Carpenter, and I'm in charge of the Office of Enforcement, but many of the primary members of the full-time members of the internal safety culture task group are also members of the external safety culture group, so that expertise is going back and forth between both groups. They're listening to what each

are doing, and so there is a lot of synergism going on there, but the other thing is I don't know if there is going to be a policy statement.

There is one that will be developed for external safety culture. We've been asked for that. As for whether -- I don't think we've made a decision yet whether there will be a policy statement for internal safety culture. I think that's part of what this task group is still exploring. Okay.

MR. COE: Thank you for that clarification, and if I may just follow your question to my question to the panelists, using the same words, you know, in a way of internalizing throughout the entire organization is a good point, and it's one that we're thinking about, and it goes to these top level statements, this sort of -- this collection of things that over time in different points in our history and for various reasons and different authors have accumulated to become sort of the statement of safety culture for us, although not necessarily by that name.

One of our challenges is that we try to be very inclusive in our thinking across the entire organization. Whereas the initiation of safety culture in our history was a technical matter, if I may, it could be defined very simply as do the

technical margins accommodate the uncertainties, strictly put, and that's far more complicated, but in essence it was a technical matter, but we were also very conscious of the fact that our corporate support offices, our human resources people, our IT people, our budget people, they all form a very important part of the infrastructure that allows us to achieve our mission as an agency.

I will end with a story that we often tell from NASA in the sixties where a janitor was asked what his function was, what his job was. His answer was, and I'm sure you've heard this, was his job was to help put a man on the moon.

How do you get people throughout the organization, regardless of whether they're technical or support or other, to really understand that mission and internalize it? That's a question that I'd like to hear any thoughts or comments from any of the folks on the panel.

MR. VALENTE: I'd like to talk about that for a minute. We have about 3,200 employees. About 1,600 of them wear work clothes, carry a tool box, drive around in a truck. The other 1,600 are sitting in an office somewhere. Some of them are only distantly related to the folks in the field, you know,

the finance people or whatever, but there are certain things that we do in common across the company, because safety is paramount to the business we're in.

So, for example, we help create the mind set that every meeting in our company, regardless of the topic or who is involved, is to start with a safety message. We do things as simple as if you go out in the visitor parking space right now, you're going to find one vehicle that's backed in. At our company on our facilities, you're required to back into your parking space. That's a safety requirement.

Every employee has safety in their performance reviews. It might only be weighted five percent if they're an office person, but it's in there. Every area has active safety committees, including our headquarters building, so it's part of creating that mind set that our business is safety-related and, you know, try to get people a little more in that mode of the way the janitor thought, and those are some concrete things. Those are very concrete things you can do to help engender that.

MR. LOCHBAUM: When you mentioned the five principles of good regulation and the other aspects of the mission statement and everything else, I haven't done the analysis, but my sneaking suspicion is those

are the right words, the right goals, the right objectives. It's the implementation of how well those are being met, and I think the comparison I would point out is the NRC recently issued its annual performance and accountability report that lists lower tiered goals and objectives, the metrics you use to monitor those, and how well you met or didn't meet those.

I think if you had something comparable to that for the five principles of good regulation and the other higher level missions, how well the agency is doing in meeting the right objectives, I think that would help more so than tweaking, you know, changing the words, doing some word smithing, so I think that's where you'd get more value for the money.

MR. COE: Thank you. Could I just get a reaction from the other two panel members?

MR. BRESLAND: Your question is how do you inculcate a safety culture right down through the organization, assuming that the people at the top are saying, "This is the right thing to do." How do you? And I don't think I can give you an answer to that question, because I don't think I -- if I knew the answer, I'd probably be out selling it and making a lot of money from doing it, but if you take it from

the other end, I visit a lot of facilities as part of my job, places that I've never been to before. I show up because we're doing an investigation, or perhaps I've been invited there for a meeting.

A lot of times you can tell you're going to a chemical plant or an oil refinery or some other -- or even an NRC office. You can tell to a certain extent what the culture is like in the organization just by how you're treated at the front gate, what's the level of professionalism that you see from the guards or from the reception staff, and I've seen -- I've seen significant variations in that, but when you get there, I think it's a pretty good way of telling, you know, I'm coming to a pretty good organization or a not-so-good organization.

I'll get back to the example of the chlorine release. That was a small company in Missouri, but they have other facilities around the country that are all somewhat similar, and if you look at that photograph you'll see ten cars of chlorine sitting out in the open being unloaded, being transferred into one-ton cylinders, potentially hazardous operation.

If you go to another company that's a very well known company -- I'm not going to mention the

name. I'm not saying anything bad about it, either. If you go -- it's a very well known company who does exactly the same thing. They will never have a -- in their minds, they'll never have a chlorine release, because they are doing things the right way.

They're bringing their rail cars into a building. They're closing off the building. They're putting a scrubber on the building. They've got monitors there. They've got automatic shut-down devices, et cetera, et cetera, and there's just a huge difference in the kind of the -- it must be the safety culture of those organizations. One is truly doing it the right way, and the other is basically putting themselves at risk on a day-to-day basis.

MS. DILLINGER: I think you tie it into the operations, and you make it relevant to the purpose of the organization, so that's done through leadership and when leadership ties in. The reason why we're here is to produce widgets for families or to produce energy for the public or to fly, fight, and win in the Air Force, and we're here to make sure that that continues to happen, because if the building blows up or if the pipeline doesn't work or those sorts of things, then the mission fails.

So it's up to leadership to explain to

people the relevance of their role in terms of improving their safety culture, because that will ensure that the mission continues, and they do that by messaging out information, by soliciting in information, and by making decisions. That's what leaders do, but I think the key way you get that answer from the janitor is by leadership explaining the vision of the organization and making sure people understand their roles in making that happen.

Another example of that is in the Marine Corps, and this is actually a difference in this services, because it's not so much the same in the Navy or in the Air Force, but in the Marine Corps, if you ask a Marine, "What do you do?" their response is always, "I'm a Marine." You know, it's not, "I'm a pilot," or, "I'm a maintenance person," or, "I'm a doctor," or "I'm a whatever." It's, "I'm a Marine," and that's part of their culture.

MR. COE: Thank you. Is there a follow-up?

QUESTIONER: Well, yes. I'm Billie Garr. I just wanted to follow up on the comment that was made by one of the panelists on making safety part of the performance indicator. In organizations that I've done some work with that have needed to change culture, making the issue of safety culture with the

various elements from whatever organizational definition of that is part of a performance review has been tremendously effective both in doing 360 reviews where the employees are actually saying, "How good a job did Dave do?" or whatever in, you know, promoting a open safety culture, free flow of information.

It modifies the behavior of supervisors who may create a different environment. It makes it part of what's an important behavior both to demonstrate and to measure and has had a powerful impact pretty quickly when it's been added to performance reviews.

MS. LANDAU: Amir, did you have a question?

QUESTIONER: Amir Kostany, National Credit Union Employee Union, Local Chapter. This is a general question for the panelists to indulge. Relative to the three most important centers or nodes in terms of safety culture advocacy that you have found in organizations either you manage or you inspect or you have observed, and more in particular, what have you found in these organizations? The local union has been a part or not a part of promoting the internal safety culture? I would appreciate a discussion.

MS. LANDAU: Anybody want to start off?

MR. VALENTE: Well, our company happens to be one of a number you can count on the fingers of one hand of a investor-owned utility that's not represented, so we have a very highly employee involved approach to everything we do because there isn't any barrier to doing that, but most of our sister companies do engage their represented workforce in the safety process. You just can't do it top down.

MS. LANDAU: Tracy, do you have anything to add to the discussion?

MS. DILLINGER: Well, DoD is really good about that, because we have a completely different approach. It's nothing like the unions. I won't bother to even be sarcastic about it, but it's --

QUESTIONER: I'm sorry, you need to speak up a little bit.

MS. DILLINGER: Sure. Of course, in DoD it's very different. Within NASA, the role of the union, I'm just not the best qualified to speak about that. I really couldn't. I mean, we via our contractors like the contractors of Boeing or Lockheed or one of those places, there is involvement there, but I don't know how that exactly works.

MS. LANDAU: Any other questions by the attendees? Yes?

MR. HORNER: Hi, I'm Dan Horner from Platts, and I wanted to go back to this question about consensus and how one deals with the ability of employees who disagree with the management decision. Maybe we can start with Tracy Dillinger and ask you, you know, what do you see as effective ways for doing that, and also to Dave Lochbaum, because that seemed to be a point of difference. You focused on the non-concurrence, and so that wasn't a factor. What would you suggest as an alterative as a way to allow disagreements to allow decisions to be made and go forward? Thanks.

MS. DILLINGER: Well, there's different -- I think there's different methodologies that can be done at different levels, so at the workforce level, and I mean like in the hangar or on the floor, one of -- an important element of the program is to have some sort of what in my world is called a Knock-It-Off program or a Knock-It-Off card. That means, you know, if I see you doing something that I know is wrong or dangerous or gives me the willies in some sort of way, I actually have a card that says, "Knock it off."

That means stop, and if I've said, "You know, I don't like this," or, "I'm not sure about this," or whatever, there is a system in place where

if I throw down my card, I am basically saying, "Uh-uh. No," and there is an agreement within the system, and if someone uses their Knock-It-Off card, everybody stops, and in systems that use -- we use this in maintenance on our aircraft so that when we've got a maintainer who really has an issue with something, they can throw down their Knock-It-Off card, and there's other systems that use a thing called a Time-Out card.

It's the same idea. The idea is, "Let's just take a couple of minutes here, stop, think about what we're doing, you know, get out the book and start looking through what's the actual guidance, and just take a minute to stop and go back and check before we go on to the next stage where it's not retrievable.

There is also anonymous reporting systems that -- in aviation what's called ASARS is another methodology of people being heard when they felt they haven't been heard, and there's other similar systems that have anonymous reporting where you can hear from employees, but I think more critical in terms of the consensus building aspect that Billie was talking about is really in terms of education and training of leadership and management in terms of listening to people when they speak and then examining the issues

that have been brought up, and then that gets into the risk management realm.

When an issue has been brought up and listened to and examined, then it's up to the decision-makers to make good decisions in terms of risk management. Is the cost worth the benefit and vice versa in what we're going to -- where we're going to go forward? And I think that's part of education for managers and leaders.

MR. LOCHBAUM: As far as my part of the answer to your question, I think the example I'd use is one of the companies I worked for before coming to UCS developed a process that provided more extensive feedback. For management's reasons, not for the employees' reasons, they were --

They got caught several times with a worker raising an issue, management attempting to address it but not fully answering the question, and the worker never got consulted again, so the issue was closed out then. The NRC came in and found several of those were -- the safety issue was known, but management didn't fully address it, and management took the hit, not the workforce.

So management wanted to change that so they more fully and effectively addressed the safety

concern that was raised, so they modified the process so that when the resolution came out, it went back to the originator to try to get concurrence from the originator that that answered the safety concern that I raised. If it didn't, or if there was a dispute that the resolution didn't address the safety concern, there was an arbiter that was set up for that formally to appeal to that would look at it independently. They didn't have a dog in the race, and they would try to determine what the right answer was.

Management went to that, again, to save themselves more so than to protect the worker, but it had the added benefit of giving a better resolution to the worker's original concern, so I think that process may not be the only one out there, but something like that would address all the issues that I have with the non-concurrence process at the NRC.

MR. HORNER: I think that a clarification on the point that Tracy made, this Knock-It-Off card, so it essentially means that everyone involved in the project potentially has a veto over it? Any one person can stop it at any time?

MS. DILLINGER: Any one person can stop it at any time.

MR. HORNER: Is there a limit to how many

times they can exercise this or anything like that?

MS. DILLINGER: There's not. It's actually more an issue of training people when to actually do it, because it is, you know, it's really illuminating, so people are generally reluctant to do that. It's not a matter of it being over-used.

In fact, there have been times where maybe people should have done it, and then the question has been, "You knew this was -- you knew this wasn't right. Why didn't you throw down your Knock-It-Off card?" and then you get into all the, "Well, you know, I didn't want to -- I don't want to be a whiner. I don't want to be a Chicken Little. I don't want to," you know, that kind of stuff.

So it's really educating people about when is it appropriate to use it and when is it not appropriate to use it and having the system in place. If you've got the one person who is doing that a lot, yes, you address that, I think, administratively, but that's very rare. That's really very rare.

It's more about getting people to use it when it's appropriate and having the people who are responsible there listening so that when something happens, it's addressed and, again, lessons learned. We learned something from this. Let's tell the other

people next door that this happened so that they don't have to go through the same experience.

MS. CARPENTER: You mentioned hesitation to use the card. Do you find it all -- you said you have anonymous systems, also. Do you find those to be effective, or is there a reluctance on that part, also?

MS. DILLINGER: It depends how the anonymous system is set up, so like in aviation via the FAA for pilots, it's an anonymous reporting system. It also allows them to mitigate other issues if a bad event comes to light, and if they've reported it through the anonymous reporting system, there is a difference versus if they never reported it, so, you know, it sort of depends on the contingencies that you build into the reporting system.

MR. VALENTE: I can't quote the stats for you, but this year so far we've received about almost 500 what we call Level 1 reports, you know, a concern or an observation or something that there was a near miss, and I can't give you the number, but we allow them -- we encourage people to sign them so we can get back to them and they can participate in resolution, but we do --

We do have a process for anonymous, and

it's very, very few get submitted anonymously, very, very few, because the mere fact of doing that is highly reinforced by leadership, but it is good to have that process so that in that rare case where someone feels like, "Well, you know, somebody above me in the food chain did this thing, and I wasn't comfortable with it," and you have to have that possibility, but it's very seldom that it's used in our experience.

MS. CARPENTER: In your company, do you have something in the managers' performance plans about --

MR. VALENTE: Oh, absolutely.

MS. CARPENTER: What do you put in there? Can you give me an example?

MR. VALENTE: I can't give you the wording, but I know that folks are held accountable for the numbers at the management level. We don't do that at the worker level. We don't hold workers accountable for the numbers, but the management level you do in an aggregate sense.

They're held accountable for the behavior of their people, so if people in an area under someone's leadership, you know, display some totally unacceptable behaviors, you know, leadership is held

accountable for that, as well, as well as the employee, and then there is an expectation of participation and support in using the programs and systems we have in place. Does that help?

MS. LANDAU: Yes?

MS. PEDERSEN: Hi, my name is Renee Pedersen, and I work at the NRC, Tracy. I'm familiar with one of the previous surveys that was conducted at NASA, and this ties into the discussion about when do people speak up, why don't they speak up, and I'm very familiar with a very interesting issue from the survey in that people are reluctant to speak up, although they're very dedicated to the concept of safety, but yet they're hesitant to speak up even when they see a safety issue, because they fear retaliation, and so I'm wondering.

In many cases that may be a perception issue, but we all know that individual's perception can lead to a sense of their reality. What are you doing or aware of -- what has NASA done to address that specific issue?

MS. DILLINGER: I'm not certain at this point what we've done in terms of addressing retaliation as a concerted effort. I know that through OSHA standards when people see -- when they see

issues, there are chains that they can report it through that way, and there is the IG system, where people can report through the IG, and both of those systems exist for NASA employees.

I don't know specifically. I'm not familiar with what you're referencing or what the agency has done in response to that. I just -- I haven't come across that yet.

QUESTIONER: Well, let me give you a little bit of answer. Unlike the rest of the panelists who are involved with companies whose employees are all protected under some various form of an Employee Protection Provision Act, NASA employees themselves only have federal employee protections, which have some -- a little bit of whistle blower protections but not well known, not very timely, not really very effective in the context of the process that it works, and their contractor employees have whistle blower protections but only on issues that may deal directly with safety that's under one of the other laws or under like contractor fraud issues, those projections are.

And I've represented two NASA whistle blowers, and the difference in the culture regarding retaliation and people's ability to raise concerns in

that culture versus what most of you are familiar with is dramatically different. They don't have the same kind of protections, and it hasn't been part of the kind of cultural rehabilitation that's been a concern of mine in terms of the changes within NASA, because I think that -- I think that's a really fundamental piece of changing culture is at least recognizing that, addressing it, talking about it, having it be part of the discussion, and I don't think that that's been part of that recovery effort, and there isn't any specific employee protection provisions. Sorry.

MS. LANDAU: Any other questions? Yes?

MS. SNYDER: Amy Snyder. I have a question for John Bresland. In your presentation you talked about the Baker Panel finding, and there's one that's interesting, and I wanted some -- the finding, one of the findings is BP had not defined the level of process safety competency required of executive management, and I'm trying to understand what is -- does process safety competency mean technical competency? Can you clarify what that means?

MR. BRESLAND: Sure. Probably an easier, a more easily understood term would be chemical process safety or refinery process safety. It's really the expertise that is required to run a chemical plant or

an oil refinery or a similar expertise -- not a similar but a parallel expertise that would be required to run a nuclear power plant or to fly an airplane. It's that level of expertise that you really understand how the system that you're managing operates.

What are the chemical engineering principles involved in running it? What are the chemical principles involved in running it? And I believe that the Baker Panel is saying here that at the, let's say, the refinery manager level, and that would be somebody who might be supervising a couple of thousand people, that there wasn't a level of expertise among those people that allowed them to understand the sort of day-to-day details of the running of the refinery, and that was a general comment that we made.

Another comment that we made in our report was that at the BP corporate level, if you look at the corporate Board of Directors, there isn't anybody on the Board of Directors who actually has experience, expertise in kind of the technical side of their business, which is getting oil out of the ground, transporting it, and converting it into gasoline and fuel oil, and we recommended that they appoint

somebody to the Board of Directors who had that level of background and experience. Unfortunately, BP has pushed back on that. They haven't -- they haven't gone along with this yet.

MS. LANDAU: Okay. Any other questions? No, we have no - yes?

MR. MARTIN: In terms of the organizational safety culture, it seems much of the problems with weakening safety culture is driven by pressure for production against safety, and so I'm wondering if in this task force effort is there some effort to look at the NRC's current production schedule, if you will, the 30-plus new license applications that are expected in plus an aging existing plant base with a lot of maintenance problems and those kinds of issues plus license extensions. So how does the NRC in this effort plan to address those kinds of pressures for getting the job done at NRC versus addressing, fully addressing the safety issues?

MR. COE: Thank you. The effort is, of course, reaching out to all offices, including the Office of New Reactors, and so employees in that office who have observations, perspectives, comments, and suggestions we're reaching out and certainly accepting of any of those. The question of quality

versus schedule has certainly come up. It's part of our discussion.

You know, I could say I think that, you know, there's a necessity to meet a certain quality standard and that we should -- as good public servants, we should do it in as efficient a way as possible, but given that, there is a lot of judgment that's involved, and it gets to some of the discussion that we've had here about how those judgments are made on a day-to-day basis, so what I can say is that at the moment, yes, it's definitely part of our conversation, and we're very much aware of it, and we hope to get further inputs from our employees on it.

MS. LANDAU: Marty, yes.

MR. VIRGILIO: I have a question for the panel. In my opening remarks, I recognized that we've brought on about 1,000 employees in the last two years, and about 50 percent of our workforce now has been with us for less than five years. Many of those employees are much younger, and now we're dealing with three generations.

I mean, I supervise people that are my parents' age and the age of my children, and I was wondering if you had any thoughts as we go about to inculcate or to make change for safety culture. Are

there sensitivities or strategies that we might want to think about for the millennials, the younger generation?

I know we talked about safety meetings, which is something that I think is a throwback to my parents' era, and we talked about videos, which I think is a great -- both are great techniques for different generations maybe, but is there anything special that we should be doing for the newer employees, the less experienced employees, the younger employees?

MR. BRESLAND: Well, we're a relatively -- as you can tell, we're a very small organization, but we have hired recently over the last few years a number of young people, you know, people with degrees, graduate degrees who truly impress me with their level of enthusiasm and excitement and ability to work, and they're always coming up with new ideas.

One came to me, and she said, "I want you to start blogging so that as you travel around the country you can write a blog describing what you're doing." I'm not a John Updike or anything like that, so I'm not sure that I'd be the best blogger in the world, but somebody else wants me to get in YouTube on a regular basis and do not live but --

So they're coming up with a lot of really good ideas, but I wonder about that, because then I say to myself, "They're young, and they're terrific, and they're very enthusiastic. If they stay with us or with NRC, whoever they're with, until they're 40 or 50, what happens to them? Have they sort of lost that enthusiasm, and have they sort of just got into the sort of the routine that they're all in, and if you go around here and talk to people in their little cubicles, would you still find the same level of enthusiasm for that sort of your generation and the old, if they stay with the organization for that period of time?" It would be interesting to follow them.

MR. LOCHBAUM: I was a member of this Vermont Yankee Oversight Panel thing that the state set up. I was up there Tuesday, and they're facing a lot of the same issues. They have an aging workforce that they're replacing as they retire.

Three of -- they have 22 instrument and control technicians. Three of them have three or more years of experience, and most of them came in in the last few years, and their other organizations are not quite as drastic turnover but similar turnover, and what they've done to address the issues that you

raised is set up peer groups with INC techs, design engineers, et cetera, at other Entergy facilities and other industry facilities so that periodically -- I don't know if it's monthly or whatever -- those peers get together, discuss the challenges they're facing, what they're doing to address them.

The older ones can transfer some tribal knowledge to the younger, the new ones. The newer ones sometimes have great ideas that the older folks hadn't thought of, so it's a two-way street, and it seems to be a fairly inexpensive way of addressing that issue and bringing along the best from both universes.

MS. DILLINGER: There are definitely differences in those populations, and there are other people sort of out there. I know of one or two of them who have done work in how you work with different groups in your workforce.

So they have different strategies that they have mapped out in terms of dealing with Millennials versus Gen Y versus Gen X versus Boomers, because they have suggestions in terms of how you message, that the communication aspects are different in terms of messaging information out that the Millennials are much more comfortable with and enjoy

more and will use more versus a Boomer, who I don't even know how to, you know, get to it, and so --

But there are different strategies that have been developed for those different populations, especially in terms of not just communication but reward systems, you know, what's considered a good thing in terms of is it money, is it time off, is it, you know, that sort of stuff, so how are they rewarded, how are they promoted, and their social networking aspects are -- there's differences in those cohort groups, and so there is information that's out there in terms of different strategies of dealing with workforce populations like that.

QUESTIONER: I'd actually like to just supplement the answers, Marty, if I could respond to your question. I think it's really great that you've got so many new people coming into the NRC in terms of changing cultures, and I -- one of the things that I hope the Panel can do as it looks at this issue is, in terms of getting ready for the next generation of plants, really be quite up-front and mindful, and I think talk to the newer employees who didn't go through the kind of nightmare of the eighties and the nineties in the final days of construction of those plants, and talk about a dynamic that developed.

Certainly, it developed in the context of the work I did at that time, which is the model was that NRC employees who were not happy with the decisions being made by a very strong executive directorate, okay, and his next generation of followers -- that the model was that they would call UCS, or they'd call the Government Accountability Project, or they'd call a public interest group, or they'd leak to a newspaper directly, and so that they --

The model at that time was that dissenting voices were only heard externally, including from NRC employees, and I'm sure that the current -- the newer NRC employees who didn't live through that don't really understand that, and I think it would be really important -- well, they may not understand it.

I think it would be really important to get a dialogue going to change that dynamic so that as the newer employees get into situations which will clearly develop where they have differing views, where they have dissenting opinions, where they're concerned about schedule, that you have a dialogue before you get there about how those issues are supposed to be addressed in a really productive way, as opposed to ways that ended up slowing down construction, causing

all kinds of controversy, leading to congressional hearings, and really focusing on the dissenting views of the NRC employees who didn't think things were going well.

And a lot of the people who lived through that are gone, and it'll repeat itself if you're not up-front about it, I think, and I think that there still has been seeds of that over the last, you know, maybe decade, and I think that that's what will be the learned behavior if you don't get that dialogue going with folks, including maybe just a lessons learned. "Here's what went wrong the last ten years, and how do we make sure that doesn't happen?"

MR. COE: I appreciate those comments very much. In fact, the task force is looking back at our history and putting together kind of a time line of how this issue and conversation on internal safety culture -- I think I might have alluded to it earlier -- has gone on since the very start of the NRC as an independent agency, so your points are well taken. Thank you.

MS. LANDAU: So we have any questions from the computer?

MR. BARTLETT: Yes. Do you want me to read it?

MS. LANDAU: Sure.

MR. BARTLETT: It's a little bit contentious.

MS. LANDAU: Okay.

MR. BARTLETT: Argumentative, maybe. Okay, this is from Linda Monica, and it says, "What stage in the development of NRC's internal safety culture do the panelists believe NRC has attained? If the NRC believes that its internal safety culture is well developed, then why didn't David Ayers, Region 2, read the Independent Safety Culture Assessment for Nuclear Fuel Services, a.k.a. the SCUBA Report, even though he was head of Region 2's Safety Culture Panel?

"For your information, Mr. Ayers called a public meeting in Erwin, Tennessee, to present an update on the progress of the NFS safety culture improvement efforts, and members of Irwin's Citizens' Awareness Network knew more about the SCUBA report than Mr. Ayers, it appeared?

"Can the panel address how the regional offices interact with the NRC headquarters in the development of the NRC's internal safety culture, since the public here in NE Tennessee perceive a disconnect?"

MR. COE: Before anybody on the panel would like to address that, I would just say that our -- as I mentioned before, our task force includes members representing a wide diversity of offices throughout the agency, 17 out of -- I think there's 24 total offices at last count.

MS. LANDAU: Eighteen.

MR. COE: Eighteen. Thank you, and all four regions are represented, and we have some very fine, very capable people at all regions, as well as our headquarters offices, but in terms of where we are in some spectrum of progress, I think we're in a continuous -- I don't think that the task force has made any effort to identify where we are.

The external communication issues that were mentioned, I think those are points that we can take back and learn from that, and I think as we try to do that in every public interaction that we have we try to take back what we can learn and do better in the future, just as we will at this meeting. I don't know if anyone else would like to try to address that.

MS. LANDAU: If there is no follow-up, we'll go out. Any other questions by anybody? More questions -- anyone on the phone, do you have any questions that you want to ask? Anybody on the

conference bridge, are there any questions that you'd like to ask? Okay. No questions on the computer?

Any final comments by the members of the panel that you'd like to make? It's, you know, early, so you have a few minutes if you want to put in your two cents.

Okay. Well, thank you all very much. I think this has been a great meeting. Doug's going to wrap it up.

MR. COE: I would just like to thank all of our panelists for attending, and I found it extremely valuable, and we'll, of course, as Mindy had mentioned earlier, make this transcript available, and there will be a -- on our pubic website under public meetings there will be a link to the information on this.

I'd also like to thank Marty Virgilio for attending throughout the meeting. Marty is the Deputy Executive Director who is overseeing our effort and the one who I report to directly with respect to task force activities, and his attendance here, I think, through this entire meeting is representative of the interest and support that he has given the task force, and I'd like to thank him for that.

We'll also have -- just to let everyone

know, we'll have additional opportunities, the task force will, to engage our panelists and other organizations even beyond the ones that are represented here as we reach out and seek good ideas from other -- both in agencies and business organizations. If you have any question or any desire to talk or chat with me or any of the task force members here after this meeting, please feel free to come up, and we'll stick around for a little while to do that.

Thank you all for your attendance.

(Whereupon, the above-entitled matter was adjourned at 11:43 a.m.)