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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

SAFETY CULTURE PUBLIC MEETING AND HEARING

MAY 28, 2014

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 INDIANA AVENUE, NW

ROOM 352

WASHINGTON, DC 20004

Safety Culture Public Hearing & Meeting
Defense Nuclear Facilities Safety Board

5/28/2014

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1 PUBLIC MEETING AND HEARING

2 - - - - -

3 (8:59 a.m.)

4 DR. WINOKUR: Good morning. My name is Peter
5 Winokur, and I am the Chairman of the Defense Nuclear
6 Facilities Safety Board. I will preside over this public
7 meeting and hearing. I'd like to introduce my colleagues
8 on the Safety Board. To my immediate right is Ms. Jessie
9 Roberson, the Board's Vice Chairman. To my immediate
10 left is Mr. Sean Sullivan. Mr. Joseph Bader will not be
11 attending today. We four constitute the Board.

12 The Board's Acting General Counsel, Mr. Richard
13 Reback, is seated to my far left. The Board's Technical
14 Director, Mr. Steven Stokes, is seated to my far right.
15 Several members of the Board staff closely involved with
16 safety culture oversight at the Department of Energy's
17 Defense Nuclear Facilities are also here.

18 Today's meeting and hearing was publicly
19 noticed in the Federal Register on May 2nd, 2014. The
20 meeting and hearing are held open to the public per the
21 provisions of the Government in the Sunshine Act. In
22 order to provide timely and accurate information
23 concerning the Board's public and worker health and
24 safety mission throughout the Department of Energy's
25 Defense Nuclear Complex, the Board is recording this

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1 proceeding through a verbatim transcript, video
2 recording, and live video streaming. The transcript and
3 associated documents, public notice, and video recording
4 will be available for viewing in the public reading room
5 here at our headquarters in Washington, DC. In addition,
6 an archive copy of the video recording will be available
7 through our website for at least 60 days.

8 Per the Board's practice and as stated in the
9 Federal Register notice, we will welcome comments from
10 interested members of the public at the conclusion of
11 testimony, which will be at approximately 11:45 a.m. A
12 list of those speakers who have contacted the Board is
13 posted at the entrance to this room. We have generally
14 listed the speakers in the order in which they have
15 contacted us or, if possible, when they wished to speak.
16 I will call the speakers in this order and ask that
17 speakers state their name and title at the beginning of
18 their presentation.

19 There is also a table at the entrance to this
20 room with a sign-up sheet for members of the public who
21 wish to make a presentation but did not have an
22 opportunity to notify us ahead of time. They will follow
23 those who have already registered with us in the order in
24 which they have signed up. To give everyone wishing to
25 make a presentation an equal opportunity, we ask speakers

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1 to limit their original presentations to five minutes. I
2 will then give consideration for additional comments
3 should time permit.

4 Presentations should be limited to comments,
5 technical information, or data concerning the subjects of
6 this public meeting and hearing. The Board members may
7 question anyone making a presentation to the extent
8 deemed appropriate. The record of this proceeding will
9 remain open until June 28th, 2014.

10 I'd like to reiterate that the Board reserves
11 its right to further schedule and regulate the course of
12 this meeting and hearing, to recess, reconvene, postpone,
13 or adjourn this meeting and hearing, and to otherwise
14 exercise its authority under the Atomic Energy Act of
15 1954 as amended.

16 This public meeting and hearing is the first of
17 two hearings the Board will convene to address safety
18 culture at the Department of Energy's defense nuclear
19 facilities and the Board's Recommendation 2011-1, Safety
20 Culture at the Waste Treatment and Immobilization Plant.
21 The second hearing will be announced via a separate
22 notice at a future date.

23 In this first hearing, the Board will receive
24 testimony from a recognized industry expert in the field
25 of safety culture, with a focus on the tools used for

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1 assessing safety culture, the approaches for interpreting
2 the assessment results, and how the results can be used
3 for improving safety culture.

4 The Board will then hear testimony from safety
5 culture experts from the Federal Government, including
6 senior staff of the Nuclear Regulatory Commission, also
7 known as the NRC, and the National Aeronautics and Space
8 Administration, also known as NASA.

9 NRC staff will discuss the NRC's approach to
10 identifying safety culture concerns at licensed
11 facilities and how the NRC expects those concerns to be
12 evaluated and corrected.

13 The hearing will conclude with a discussion
14 from NASA staff concerning NASA's policy for safety and
15 mission success, tools the agency uses to improve safety
16 culture, and NASA's experience in improving and
17 sustaining a robust safety culture.

18 In a follow-on session later this summer, we
19 will discuss with the officials from the Department of
20 Energy how these approaches and lessons learned might be
21 used to guide their efforts in continuing to assess and
22 improve safety culture at the Department's defense
23 nuclear facilities.

24 This concludes my opening remarks. I will now
25 turn to the Board members for their opening remarks.

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1 Ms. Roberson?

2 MS. ROBERSON: None at this time, Mr. Chairman.

3 MR. WINOKUR: Mr. Sullivan?

4 MR. SULLIVAN: Yes. Good morning. And at the
5 outset, I just wanted to take a moment to say that I
6 don't actually plan to ask any questions of our panelists
7 this morning, and I wanted to briefly explain why.

8 As I understand the purpose of this hearing,
9 we're supposed to be gathering information that may be
10 used in a subsequent hearing with the Department of
11 Energy to enlighten them on ways to improve their
12 safety culture. And to be honest, I don't believe that
13 anyone can say anything, myself included in this room in
14 the next few hours, that will actually fulfill that
15 purpose.

16 I've been wrong before, so maybe I'll be wrong
17 here, and maybe I'll learn something. But -- and
18 depending on what is said, maybe I'll have some more to
19 say on the topic at the end. But in the meantime, I plan
20 to sit here and listen respectfully. The panelists
21 certainly are experts in their field, but since I haven't
22 been able to figure out for myself what points we should
23 be making on the subject today, I don't plan to engage
24 any -- engage in the questioning.

25 This concludes my remarks.

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1 MR. WINOKUR: And this concludes the Board's
2 opening remarks. At this time, I'd like to invite our
3 three organizational culture experts to the witness
4 table. Each expert will be provided 25 minutes to make a
5 presentation that addresses some initial lines of inquiry
6 provided by the Board in advance of this hearing. The
7 Board will then question each witness.

8 Our first expert with us is Dr. Sonja Haber.
9 Dr. Haber is an organizational psychologist and President
10 of Human Performance Analysis Corporation. She will
11 speak about her company's techniques and experiences in
12 conducting safety culture assessments. Dr. Haber has
13 developed a methodology to evaluate organization and
14 management influences on organizational safety culture
15 used in over 60 organizations across different industries
16 and in different countries around the world.

17 Dr. Haber was a member of the International
18 Atomic Energy Agency team working on the human and
19 organizational factors section of its report on the
20 Fukushima accident. Dr. Haber served as the lead on an
21 independent safety culture assessment team investigating
22 the Davis-Besse nuclear power station vessel head
23 corrosion event.

24 In support of DOE's implementation of Board
25 Recommendation 2011-1, Safety Culture at the Waste

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1 Treatment and Immobilization Plant, Dr. Haber has
2 conducted safety culture assessments at DOE's major
3 design and construction projects, the Pantex plant, and
4 the headquarters offices of the National Nuclear Security
5 Administration, DOE's Environmental and Management
6 Organization, and DOE's Health, Safety, and Security
7 Organization.

8 Our second expert witness is Dr. Stephanie
9 Morrow. Dr. Morrow is an organizational psychologist and
10 safety culture program manager at the Nuclear Regulatory
11 Commission. She will speak about the processes that the
12 NRC uses to determine when there is a need to assess
13 safety culture at commercial nuclear plants and what
14 their expectations are when one is conducted.

15 Dr. Morrow has performed assessments of safety
16 culture at nuclear power plants and vendor sites;
17 conducted studies on the relationship between safety
18 culture and safety performance; consulted with the
19 International Atomic Energy Agency to develop a global
20 safety culture assessment survey; and served as a
21 panelist on a series of workshops to develop a safety
22 culture common language for the U.S. nuclear power
23 industry.

24 Our final witness is Dr. Tracy Dillinger. Dr.
25 Dillinger is an organizational psychologist and program

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1 manager at the National Aeronautics and Space
2 Administration. She will speak about approaches in
3 assessing and managing organizational culture within
4 NASA. Dr. Dillinger is the manager for three programs:
5 safety culture, human factors in mishap investigations,
6 and human reliability assessment at NASA headquarters.
7 She presently chairs a safety culture working group at
8 NASA.

9 Prior to joining NASA, Dr. Dillinger was the
10 Chief of Aviation Psychology for the U.S. Air Force from
11 1998 to 2008. During her service in the Air Force, she
12 developed and instituted the organizational safety
13 assessment program and the Air Force culture assessment
14 safety tool.

15 Finally, she was a member of the Columbia
16 Accident Investigation Board and the Space Shuttle
17 Independent Assessment Team.

18 Let me add that I, for one, believe there is a
19 great deal that can be learned from each of the panel
20 members about how to assess and improve safety culture at
21 DOE's defense nuclear facilities. I hope you'll be
22 patient with us. We'll begin the presentations with Dr.
23 Haber.

24 DR. HABER: Thank you. Good morning, Chairman
25 Winokur, members of the Board, colleagues, and interested

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1 parties. I'm very pleased and honored to be asked to
2 present to you today my perspective and experience in
3 working in the area of safety culture for almost 30
4 years. Over those years, safety culture has been labeled
5 many different ways. It's been defined in several
6 different ways, but the essence of the concept has not
7 changed and nor should it be changed.

8 Safety culture really refers to the
9 characteristics of the work environment: the values, the
10 rules, and common and shared understandings that
11 influence perceptions and attitudes about the importance
12 that the organization places on safety. Most important
13 are the words that are italicized: the perceptions and
14 the attitudes, because it's often a notion that we forget
15 when we think about safety culture.

16 I've been asked this morning to talk about,
17 among other things, the assessment of safety culture, how
18 can we understand it, how can we evaluate it, how can we
19 measure it, and, most important, how can we manage it and
20 change it if we need to.

21 All of my remarks are based on some
22 methodological premises when thinking about safety
23 culture. The first is that a safe working environment is
24 really impossible without an effective organizational
25 safety culture. Organizational culture consists of the

1 context in which behaviors occur and the expectations and
2 values that are perceived to be reinforced by the
3 organization are exhibited. So, what we see is really
4 what people think is expected of them in the
5 organization. This is our descriptive framework for
6 thinking about safety culture.

7 Having a method that allows us an objective and
8 systematic way to measure these behaviors that we observe
9 has an impact on how safety performance can be changed,
10 and that can be a useful tool. It then becomes a
11 normative way for us to look at safety culture.

12 There are many models of organizational
13 culture, but by and large they all talk about behaviors
14 as the observables of the values and beliefs that
15 underlie the behaviors we observe. So, when we see
16 things, we're really seeing a reflection of the
17 underlying attitudes and perceptions that people have,
18 and that's why they behave in the way that they do, and
19 that's why we have differences across individuals and
20 across human behavior, because we have different
21 perceptions sometimes about the same thing.

22 Understanding these behaviors and having
23 reliable and valid tools to assess them is not just the
24 most effective way to understand and assess
25 organizational safety culture; it's the only way.

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1 Without really having reliable and valid tools, we run
2 the risk of making very wrong assumptions.

3 Too often we find, and I have found over 30
4 years, that organizations just look at processes or
5 performance indicators, which are only outcome measures
6 and can be obtained by several different behaviors. For
7 example, you can obtain the same result using two
8 different routes to get there. One route might exhibit
9 some very positive behaviors that might give you a good
10 safety culture and a good outcome. Another route might
11 not have the best behaviors but still give you the same
12 outcome. If you only measure the outcome, you don't know
13 how you got there. And it's those behaviors that are
14 what you really need to understand in terms of the
15 culture of the organization. So, it's very important not
16 to look just at processes and indicators.

17 The other aspect that we don't often think
18 about or look at is the complexity of relationships that
19 go on to form an organizational culture. And that means
20 that we cannot just look at individuals or human
21 performance. We cannot just look at the technology. And
22 we cannot just look at the organizational infrastructure.
23 We need to look at the interrelationships of all of those
24 things because they each influence one another and
25 determine how people behave in the organization. So, it

1 is a very complex situation that cannot be analyzed by
2 single variables alone.

3 I'm not going to go through these, but there's
4 been a lot of literature and we did a lot of work to
5 identify the organizational behaviors that could impact
6 safety. And if you look at these, they're the same
7 behaviors that can impact a lot of performance in an
8 organization. They're not always unique to safety.
9 There might be certain outcomes that you look at that
10 are unique to safety, but by and large the behaviors
11 that people will exhibit are not that different. It's
12 just how they apply them in the context of safe
13 performance.

14 More importantly is how are we going to measure
15 and assess these behaviors. We often think that we're
16 all human beings so we can look at behavior and
17 understand it and know it and label it and evaluate it.
18 But in reality, as we know, there's a lot of variability
19 in behavior. We don't all behave the same. We don't
20 even all behave the same ourselves over the course of
21 time.

22 We are not components and technical systems
23 that we can run a thousand times to get a reliability
24 coefficient. We are human beings. And we have a lot of
25 variability in what we do. So, to do that, the best way

1 we can understand the behavior is to use multiple tools
2 to look at those behaviors and to use valid and reliable
3 tools. And if we use those tools independently of each
4 other, then we know if we come to some conclusions that
5 are similar we may, in fact, be getting at some of those
6 beliefs and values that are underlying that behavior,
7 which is really where we want to be if we're talking
8 about culture.

9 So, some of the types of methods that are used
10 are not new. There are various forms of them, but you
11 must be careful in the ones that you choose and how you
12 choose them. A functional analysis is a description of
13 an organization. It's a static representation. It's the
14 organizational charts; it's the procedures; it's the
15 policies, those things that we can read and look at.
16 They are observables, as well.

17 We do interviews. We do focus groups, which
18 are basically putting groups of people together and doing
19 interviews with multiple persons. We have behavioral
20 anchored rating scales, another way to get at people's
21 perceptions about behavior. We do behavioral
22 observations, which may be one of the more important
23 tools that we have. And we also have done surveys. And
24 all of you are familiar with these with perhaps the
25 exception of the behavioral anchored rating scales, which

1 is a little unique to our methodology.

2 But the point is that multiple methods are used
3 to assess each organizational behavior and to provide
4 convergent validity. What does that mean? It means that
5 if I'm looking at communication in an organization, I'm
6 going to look at it independently through my interviews,
7 through my focus groups, through my behavioral anchored
8 rating scales, through my observations, and through my
9 survey.

10 And only when all those results independently
11 come together and give me similar conclusions will I say
12 this is what I think is going on about communication in
13 this organization. And that's a key point, because too
14 many people rely on one tool or one method, which may in
15 itself not be the most reliable or valid method, and they
16 have no other way to confirm or deny the results that
17 they see.

18 So, it's very critical to use multiple tools
19 when we're talking about such a variable thing as human
20 behavior, which is a reflection of those values and
21 attitudes and perceptions. Think of the complexity that
22 you're trying to get at with one of these tools. So, I
23 really cannot stress the importance of that enough if
24 you're talking about assessing or measuring safety
25 culture.

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1 Okay, so, what about the characteristics of the
2 assessment? What are the types? Well, you can do an
3 independent assessment. Independent assessment is what
4 we call an external or third-party assessment, where
5 somebody who is not affiliated with the organization
6 comes in and does a safety culture assessment.

7 We could probably have another panel discussion
8 about the definition of independent. Is the industry
9 looking at itself independent? Is a contractor paid by
10 the corporation independent? These are good questions,
11 but I think the point is that as independent as we can
12 get, there's somebody who really has no vested interest
13 in the day-to-day activities of the organization and can
14 look at it with a different set of eyes.

15 There is self-assessment. A lot of questions
16 go on about how good can self-assessment be. Clearly,
17 self-assessment may not be the most critical way to look
18 at yourself or your organization, but it's an important
19 one. And if it's done right with the right tools, it's
20 an excellent learning process for the organization to try
21 to understand where it is and where it needs perhaps to
22 improve. But it probably shouldn't be done in absence of
23 an independent assessment at some point in time to make
24 sure that there is that different perspective.

25 And, so, we also like the hybrid model. And

1 the hybrid model consists of using some independent
2 experts, as well as some members of the organization that
3 would constitute a self-assessment portion. It gives
4 those members an opportunity to learn from the
5 independent members as well as to share their knowledge
6 of the organization with the independent members. So, we
7 think that can be a very useful model.

8 The scope of an assessment, it can be broad or
9 it can be focused. If it's going to be broad, we often
10 forget that the corporate function of an organization is
11 critical in determining culture. It often drives the
12 values; it dictates the resource allocation; it drives
13 the decision-making; and sometimes we just don't look at
14 it because we get too focused on the facility that may
15 have had an event, but we need to consider the corporate
16 in a broad scope.

17 A focused scope, maybe we just have a
18 particular part of the organization, a division, a
19 department, that we might be more concerned about. But,
20 ultimately, we're probably going to have to look at a
21 broader scope to really understand the culture of that
22 organization, even for the piece embedded in that bigger
23 picture.

24 How do we do it? What is the team composition?
25 Go back to the issue of complexity. You need to have a

1 diverse team, and that means you need people who have
2 expertise, education, training, not just experience, but
3 people that really know what it means to look at human
4 behavior. But you also need people that understand the
5 technology of the organization. And you may need some
6 people from an organizational psychology perspective or
7 human performance perspective because we're looking at
8 those interrelationships that are so critical.

9 We do believe that since the ultimate goal here
10 is to understand behavior, to get at the values and the
11 perceptions, that probably an individual with a
12 behavioral or social science degree would serve the
13 interests of the team best to lead that team.

14 People need to be trained on the methodology,
15 even if they are experts in the field, because you're
16 going out as a team and you want everybody to be working
17 on the same page. People need to understand those tools
18 and how they're going to be implemented in the particular
19 assessment. Everybody has a different way to do an
20 interview. Everybody has a different way to do an
21 observation. You need to have some reliability in
22 the way you're going to collect that information. And,
23 so, you need people to be trained together to work as a
24 team.

25 As we said, the tools have to be reliable and

1 valid. And for those of you who are not familiar with
2 that, reliability is the ability to take a tool and to
3 administer it and to get a similar result within a
4 reasonable time frame so that you know it is reliable
5 from point one to point two.

6 Valid means that you're actually assessing the
7 constructs or the attributes of the behavior or the
8 concept that you're interested in. And there is face
9 validity; there's construct validity; there's all types
10 of validity that you need to be sure your tool can
11 measure, so, when we talk about communication we know
12 we're measuring communication.

13 And, finally, the information collected. As
14 much as we all like to look at pretty pictures with
15 quantitative data in different colors and different
16 charts, and that's helpful, qualitative information has
17 to be obtained, too. The only way the organization is
18 going to understand what you're trying to explain to it
19 is by anecdote and example of its own behavior. So, we
20 really recommend that you must have quantitative as well
21 as qualitative information.

22 Evaluation of the data, what we've described so
23 far is collecting descriptive, objective data through
24 multiple tools, trying to get at those behaviors which
25 represent the underlying values and attitudes by

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1 objective and hopefully reliable and valid tools. Then
2 we need to evaluate it, because ultimately we're trying
3 to determine whether or not we have a positive safety
4 culture or one that needs some improvement.

5 The choice of normative framework is yours.
6 And what I mean by that is there are multiple in the
7 nuclear industry, for example. We have INPO and NRC that
8 have now come together for the 10 traits. During my 30
9 years, that wasn't always the case, and we had different
10 models. We have the International Atomic Energy Agency
11 that has their framework; WANO, which has a slightly
12 different framework with the world association. And then
13 in different industries we see different models.

14 But let's remember, we're talking about the
15 same behaviors. So, if we go in and collect the data on
16 the behaviors, then we can apply it to almost any
17 normative framework that we want. And I can tell you
18 from my experience, I've worked with organizations that
19 where I've collected data and then they've asked me to
20 put in two different frameworks. So, in one case I might
21 have put it in the INPO framework; and in another case, I
22 put it in the IAEA, the International Atomic Energy,
23 framework, because I'm collecting the same underlying
24 data, I'm just now looking at a different normative
25 model.

1 As Dr. Winokur mentioned, we've applied our
2 methodology and done this work in over 60 different
3 organizations, different industries, different countries,
4 and we have found that it discriminates between
5 organizations in terms of those that have a more positive
6 safety culture and those that do not. And that can be a
7 very useful tool. It can also help the organization
8 itself when looking at itself at time one versus time
9 two.

10 So, what have we learned? What are the
11 discriminating behaviors that we have found across all
12 these organizations over time? They won't come as any
13 surprise, I'm sure. Leadership is key. Leadership in an
14 organization may not be a particular behavior but a
15 conglomerate of several of the behaviors that we look at.
16 But it is key. How it is implemented, who it's
17 implemented, how it's respected, how it's valued by the
18 organization are key.

19 Communication. Everyone shakes their head and
20 says, yeah, communication is a problem. It is a problem,
21 but it's not a problem sometimes for the reasons that you
22 think. Communication is not somebody telling somebody
23 else what to do. It's a dialogue. It's listening to
24 what other people have to say. And, so, you could have
25 communication strategies that will never work because the

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1 only idea is for people to tell other people what to do.
2 And that's not going to get you results when you're
3 talking about trying to change behavior.

4 Organizational learning. An organization has
5 to learn not just from others, from operating experience,
6 but from its own performance. It has to use its own
7 mistakes and its own successes to move forward and to be
8 prepared and have a better performance in the future.
9 And too often we forget how to learn from success. It's
10 only the proactive organization that can actually take a
11 success and understand why it worked and then use it for
12 its next opportunity.

13 Problem identification and resolution. I think
14 in most industries we've worked pretty well on the front
15 end of that, namely the identification of problems. We
16 have corrective action programs. We have wonderful
17 problem identification systems. We're very good at
18 trying to get people, encourage them to put problems into
19 a system and to identify them.

20 We're not always so good at the back end, of
21 resolving the problems and making people understand and
22 feel that they're important problems to solve or at least
23 to address. And if you don't do that, then soon the
24 front end, or the problem identification, goes away
25 because people become apathetic. And, so, it's the

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1 positive, proactive organization that can make both ends
2 of that process work.

3 How do you address the gaps that you find?

4 Well, I'm pretty passionate about some of these things
5 over the years. We talked a little bit about
6 communication already, and I said it's not a one-way
7 process. It's a feedback loop. And we too often forget
8 that we need to listen and to give feedback and to
9 confirm and then to send messages over and over again.

10 We need to have engagement. What does
11 engagement mean? Engagement doesn't mean some senior
12 manager telling some people to sit on a committee and to
13 be involved. That's not engagement. Engagement is for
14 everybody in the organization to be involved, as many
15 senior managers as you need, to include as many people
16 and representatives of the organization as you can, and
17 to make them feel that they're valued, to listen to them,
18 and to actually use some of the ideas. It sounds very
19 simple, but we don't do it. We don't do it enough.

20 Internalization. This really relates to some
21 of the other ones on the list. Too often we just think
22 that we can fix something, a gap in an identified safety
23 culture weakness, by creating a new process, a new
24 procedure. Now we have a whole list of new corrective
25 actions based on our assessment that we did, and we can

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1 create a wonderful checklist, and we can go through the
2 checklist and tick off each thing that we've done and
3 say, oh, look, we're going to improve our safety
4 culture.

5 That is not sustainable behavioral change.
6 That's only meeting compliance for regulator or meeting a
7 corrective action milestone for a program in an
8 organization. It's not internalizing the change and it
9 won't be sustainable over time. So, while it may be
10 important to identify what you have to change, you need
11 to think about the communication, the engagement, and the
12 internalization when you're going to change it. And
13 that's the hard part. It's a lot easier to tick off the
14 mark on the checklist and say that we've closed this
15 corrective action out.

16 And, again, we need to think about metrics.
17 Often we look at how we've addressed a gap through
18 metrics. How many corrective actions have I effectively
19 closed out? Okay, 90 percent this week, I guess I'm
20 green, I guess we're good to go. Are metrics going to
21 really change our behavior in the organization? Are they
22 going to change the shared values and understanding and
23 attitude in the organization? Probably not. It might
24 help, but only along with other things.

25 And in light of all of that, we need to think

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1 about the complexity, because if we're really going to
2 address these gaps, we can't address them at a single
3 variable level. We need to look at that
4 interrelationship between when I change a process, have I
5 thought about the behavior that I have to change with it
6 to make the process work and to internalize it? Or am I
7 just going to change the process?

8 When I talk about changing individual
9 performance, am I just going to play the blame game and
10 try to change people's behavior by a rewards and sanction
11 program? Or am I going to think about the complexity of
12 what I do in my organization that's going to sustain that
13 kind of reward and sanction program? Too often we're
14 just doing it at the single variable level and it won't
15 work.

16 So, have we seen any organizations that can do
17 this? Yes, we have. And they are proactive
18 organizations. They like to get out a step ahead. When
19 we worked with the High Reliability Organization group
20 out at the University of California in Berkeley, they had
21 identified three things that any key high reliability
22 organization would have.

23 And one of those things has never left me
24 because I think it's so true and it really does reflect a
25 proactive organization. Those organizations aggressively

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1 seek to know what they don't know. Think about that,
2 okay. How many of us can really say we work in
3 organizations like that? It's a really wonderful
4 expression. And I think that that really exemplifies
5 what a proactive organization is.

6 They think about things for longer term
7 investment. They're not looking for the immediate short-
8 term consequence. It becomes a way of doing business for
9 them, and they think about behaviors in parallel with
10 process. So, if they're going to change something, if
11 they're going to make that change, they use an
12 integrative approach, which means they think about what
13 behaviors have to change and how they can integrate that
14 and internalize that into the process.

15 Their solutions are that they can be more
16 focused on strategies for key behaviors, because they
17 don't have to necessarily turn everything upside down.
18 They know where they have to focus. And what they get is
19 long-term cost reduction -- not short-term, but long-term
20 cost reduction. They get a better return on their
21 investment for doing that. And they really are a
22 performance and process-based culture.

23 Compare that to the reactive organization,
24 which unfortunately too many of our organizations are,
25 especially those that get into trouble and have to get

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1 out. And, unfortunately, that's where we spend most of
2 our time. They do short-term investment. Okay, we're
3 going to change safety culture. We can train everybody
4 in a four-hour session over the next six weeks. That's a
5 big investment, right? Think about what the return on
6 that investment is.

7 They are driven by outcome measures, right?
8 They only care about those performance indicators. I've
9 got 75 percent of my organization now believing they
10 should identify problems. I must be green. They don't
11 think about the other 25 percent that aren't identifying
12 problems that could bite them in the back.

13 Their behaviors follow process, so they change
14 the process first and then they worry about the behavior.
15 So, consequently, they're not going to get that
16 internalization. They're going to take the diagnostic
17 approach, which is they're going to take their assessment
18 results and then they're going to change things around,
19 but they're not really going to think about the behaviors
20 that need to change with that process.

21 These organizations typically require
22 significant behavioral change because they haven't
23 thought about that up front. They have longer term
24 costs, and they have a poorer return on their investment.
25 They're often a compliance-based culture. They're just

1 doing it because they have to.

2 So, what are the challenges to the organization
3 because of our external stakeholder involvement? If we
4 go back to the idea of complexity, remember that whatever
5 organizations do is not independent of the outside world.
6 And I think at DOE you probably know that better than
7 anybody else. It's dependent up on all kinds of other
8 stakeholders that control a lot of variables. How does
9 that impact, how does that challenge our organizations in
10 terms of safety culture?

11 In the past, and maybe even in the present for
12 many organizations, we've just focused on process and
13 outcome, not behaviors, because many of our external
14 stakeholders have forced us to do that. Okay? They want
15 to see the results. They don't care sometimes how you
16 get there. The standards in safety culture have not been
17 clearly defined, so there's a lot of ambiguity about how
18 we get there and what it means. So, it's allowed people
19 to drive to their individual ways of doing things.

20 A regulator, whether it's self-regulator or
21 external regulator, cannot really require excellence.
22 They require compliance. How do we meet the
23 requirements? That's not going to drive what we're
24 looking for in a positive safety culture. So, a
25 proactive safety culture requires continuous improvement

1 in proactive behavior, sometimes things that external
2 stakeholders don't always understand. So, it becomes a
3 challenge for the organization that's really surrounded
4 by all of these stakeholders.

5 The impact of that is that external stakeholder
6 involvement, while it has facilitated the importance of
7 safety culture, unfortunately it's become kind of a fad
8 term for us or the flavor of the month, if you will. The
9 external stakeholder requirements also can inhibit
10 positive safety culture change because they're forcing
11 that reactive type of behavior. They're forcing the
12 outcome type of behavior rather than the behavioral
13 change.

14 And reactive organizations are more likely to
15 sustain those behaviors in response to their
16 stakeholders. It becomes a vicious cycle, and it's very
17 hard for them to get out of it. So, organizations have
18 to move beyond their stakeholder guidance to develop and
19 maintain their own positive approach to trying to change
20 safety culture.

21 In summary, I hope what I've been able to tell
22 you is that there are methods to assess and to effect
23 safety culture. We don't have time to discuss all of
24 those in detail. An integrative approach that looks at
25 the behavior, as well as the process, is more likely to

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1 effect a positive safety culture change than behavioral
2 change.

3 Discriminating behaviors can facilitate
4 effective positive safety culture change, the
5 discriminating behaviors being leadership, communication,
6 organizational learning, problem identification, and
7 resolution. And external stakeholder guidance on safety
8 culture will not by itself effect positive behavioral
9 change.

10 What I'm really trying to tell you is
11 organizations have to want to change. They have to want
12 to understand the behaviors that underlie their values
13 and their beliefs, and they have to want to change that,
14 not just because some stakeholders have told them that
15 they have to change that.

16 Thank you.

17 DR. WINOKUR: Thank you, Dr. Haber.

18 We're going to continue with questions from the
19 Board now, and the questioning will begin with Ms.
20 Roberson.

21 MS. ROBERSON: Good morning, and first of all I
22 want to say thank you to the entire panel for taking the
23 time to talk to us. Dr. Haber, thank you so much for
24 your comments. I definitely learned some things in your
25 presentation.

1 I want to explore a few things with you. One
2 is your organization has done assessments for over 60
3 organizations. And I'm sure out of that you talked about
4 the -- kind of the -- I won't call them generic, but the
5 common weaknesses you see: organizational learning,
6 leadership. But out of those 60 organizations, I'm sure
7 you've seen the range of leadership competency. You've
8 seen good leaders and you've seen poor leaders -- my
9 words, not yours.

10 So, why does it often take external force for
11 an organization to start to look at themselves in a way
12 to understand this culture? Why does it take either a
13 significant failing, process failing or outcry from an
14 external party or stakeholder? Why do leaders not see
15 that their expectations are not being reflected in the
16 norms of the organization?

17 DR. HABER: Okay. The best analogy I can think
18 of is how often do we like to look at ourselves in the
19 mirror? It's a difficult thing to do. It's very hard to
20 be that self-critical and to say, oh, maybe I need to
21 change something or maybe I need to do something
22 differently. So, I think part of it is just a general
23 nature of our own that we don't like to be self-critical,
24 it's hard.

25 In another vein, I think that often depending

1 upon the organization and the situation, many leaders and
2 many managers have a lot of other priorities, okay? And
3 they are concerned with meeting those outcomes, whether
4 it be measured or not, that those become their priority.
5 And, so, whatever they need to do to get there is what
6 they're going to do, and they often don't think about the
7 consequence of that in some of these other ways like
8 behavioral change of culture change.

9 MS. ROBERSON: Mm-hmm. So, one of the things
10 that we're very interested in and to see, and I'm sure
11 you've seen it throughout your career, is the difference
12 between the perceptions of managers and those of workers.
13 And when I'm talking workers, I'm talking managers from
14 first-line supervisor up or down, but the workers on the
15 floor versus the senior leadership.

16 Can you discuss why this is normal, why you
17 think it occurs, and how its significance can be
18 interpreted and effecting of the safety culture of an
19 organization?

20 DR. HABER: That is not an unusual observation.
21 Again, I think they have some different goals and
22 priorities, but what we have seen that is probably of
23 more interest is the differences between levels of
24 managers. So, it's not only differences that you observe
25 between managers and non-managers, but within an

1 organization you can have significant differences between
2 senior managers, middle managers, first-line supervisors.
3 So, that's telling us something about perhaps the
4 nonalignment or lack of alignment in how people
5 understand what the shared values of that organization
6 are. If they have a mixed message, how do you suppose
7 the non-management or the workforce feels? They're not
8 quite sure what the values are if their own management
9 can't really agree on the same values.

10 So, while that is not uncommon, we also have
11 seen -- there are not a lot, but there are some where
12 there are no differences across the entire organization
13 in values and beliefs, between managers or non-managers
14 or within managers. And very homogenous organizations
15 like that can exist for several reasons. They can exist,
16 one, because they really do all understand what the
17 common values and goals of the organization are. Two,
18 they could be in a high state of change, so that people
19 might not be clear yet on what the priorities or the
20 values in the organization are. But they do exist, and
21 by and large, in a proactive organization, you tend to
22 see more alignment there than in a reactive organization.

23 MS. ROBERSON: So, how does an organization
24 balance mission and safety?

25 DR. HABER: You know, we often pose that

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1 question to organizations, right, whether mission safety
2 or production safety, however you want to think about it.
3 But I think if you think about what I've said and you
4 think about looking at behaviors, the behaviors are not
5 mutually exclusive to mission or to safety or to
6 production or to safety. It's the same behaviors, and
7 they clearly -- you would want, you know, your mission-
8 directed behaviors not to intervene with your safety-
9 directed behaviors. They really are not independent or
10 mutually exclusive. And you often need some of those
11 same behaviors just perhaps focused in a different way.

12 I think you can focus on mission for a short
13 term, but ultimately, you know, I think they're really
14 the same behaviors and that you're going to have to
15 resolve that to have safety and mission.

16 MS. ROBERSON: Thank you.

17 DR. WINOKUR: Well, let me thank you for your
18 presentation. That's very illuminating and I certainly
19 want to spend more time studying it. But I want to
20 follow up from the question of Ms. Roberson in terms of
21 this behavioral change.

22 I mean, this is a tough thing, behavioral
23 change. And when I look at the definition of safety
24 culture, and I've talked on it a few times, not as
25 eloquently as you, I note that the definition of the

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1 International Atomic Energy Agency and the Institute of
2 Nuclear Power Operations say that safety is an overriding
3 priority, but the Department of Energy's definition is
4 more balanced, it's more in terms of a balanced mission
5 and safety.

6 So, I'm going to make behavioral change in the
7 organization, is that a meaningful difference, the
8 message coming that safety is an overriding priority
9 versus let's balance mission and safety? Is that a
10 meaningful difference if you're trying to change
11 behavior?

12 DR. HABER: In terms of that changing behavior
13 equates with overriding priority?

14 DR. WINOKUR: Well, you're trying to change the
15 behavior of your workforce to hopefully improve your
16 safety culture, right?

17 DR. HABER: Mm-hmm.

18 DR. WINOKUR: And you're hearing the message
19 from up high, from management, and one message from the
20 NRC may be that safety is an overriding priority. That's
21 clearly stated in the definition of safety culture.

22 DR. HABER: Mm-hmm.

23 DR. WINOKUR: In another organization, your
24 core value, DOE, it's integrated safety management is --
25 says you balance mission and safety. Is it meaningfully

1 different to the workers to hear those two different
2 messages?

3 DR. HABER: I don't think so if the leadership
4 implements the model for safety and behavior change in
5 the appropriate way. I think what happens is is that
6 often we take that overriding priority to an extreme on
7 either side. I think there has to be a balance to some
8 extent, and I think that, again, think about -- I mean,
9 overriding priority for safety. We're not talking just
10 nuclear safety, right? We're talking occupational
11 safety; we're talking radiation safety; we're talking
12 about fire safety, all aspects of safety which are going
13 to permeate all aspects of our mission, our production,
14 or whatever we do.

15 So, if we're not using safety as a value in
16 meeting our mission or our production, then we're not
17 bound to succeed in either way. So, I think there is --
18 by definition, there has to be a balance to get the
19 result that you want, whether it be on the mission side
20 or the safety side.

21 DR. WINOKUR: Okay, thank you. Let me ask
22 about this behavioral change. I mean, it's just -- when
23 you say this to people, it sounds so -- so ill-defined,
24 so nondescript in some ways. Where is the real driver
25 for this behavioral change? Is it really just purely

1 leadership that has to drive it in the end? Or is there
2 a bottom-up drive to it, also? I mean, where are you
3 going to look to -- let's say you have a safety culture
4 that's not what you want it to be. Where are you going
5 to look to start the process to improve it?

6 DR. HABER: Okay. It's a very good question.
7 There are several models for this that I've seen over the
8 years. And I think the one that I would recommend is the
9 one that's going to sustain it the longest and not all of
10 them do. One model is that you bring in -- you've had an
11 event or you've identified some gaps in safety culture
12 that are fairly significant. You bring in a crisis
13 manager. You bring in somebody who's going to turn
14 everything upside down and create a very chaotic
15 environment and organization. It's basically the shock
16 and awe, if you will, model of changing safety culture.

17 Does that sustain itself? No. It might get
18 the organization through that period of time, and if they
19 have the right leadership after that, you might be able
20 to then create those sustainable changes.

21 The second model is the one where you do the
22 engagement factor. Behavior change can't just come from
23 the top down. And it doesn't come from the bottom up
24 just. You have to have the leadership and managers that
25 are going to model the right behaviors that really, I

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1 hate to say it, but walk the talk. You have to have
2 those, but you also have to have a workforce that's
3 motivated and wants to change.

4 And an organization can do that in different
5 ways, but there has to be the motivation of people to
6 want to change. Just for me to tell you you have to
7 change doesn't work. It's a behavioral theory, you know,
8 of behavior that says you've got to have some motivation,
9 some reinforcement. There has to be something driving
10 the change and then a good leadership that's going to
11 help manage that change.

12 DR. WINOKUR: So, what are these behaviors?
13 What do they look like? I mean, you've been using this
14 term.

15 DR. HABER: Okay, we've talked about some of
16 them. We've talked about wanting --

17 DR. WINOKUR: Let me help a little bit. Let's
18 say I just -- I'm performing oversight and I walk into a
19 DOE defense nuclear facility. What am I looking at?
20 What would I want to see?

21 DR. HABER: Okay, you would do observations of
22 work environment, of meetings. You would look at how
23 people are communicating. Are people at all levels
24 initiating communication? Are they asking questions?
25 Are they challenging? Are they using their procedures

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1 and processes if that's an expectation? Do they have
2 expectation? Is it clear what their roles and
3 responsibilities are? Are they just doing what they
4 think they need to do without regard to the
5 organizational infrastructure and values?

6 There are a lot of different things that you
7 can look at: how are decisions made, are people involved
8 in it, are different groups involved, is it a top-down
9 decision-making, is it -- are there committees that
10 involve people from all levels of the organization. I
11 mean, it's not a simple -- remember the complexity issue,
12 it's not a simple one-to-one. You can't just go in and
13 make an observation and say, okay, I get it now. You
14 know, there has to be a lot of understanding of what's
15 driving all the behavior in that organization. And
16 that's the key. I think the problem is too often we
17 think we can do this very simplistically, and it really
18 doesn't help. It doesn't help our understanding; and it
19 doesn't help the organization change.

20 DR. WINOKUR: So, how do I measure that? I
21 mean, you've also used the word "measuring behaviors,"
22 and you've been very clear about what some of the
23 behaviors are. How does one measure them?

24 DR. HABER: Well, we gave you some examples. I
25 think the key is the behavioral observations. And the

1 reason I say that is that you can do interviews, you can
2 ask people about the behavior. Let's take a particular
3 behavior. Let's talk about communication. We can go and
4 have an interview and ask people about communication in
5 the organization. We can ask them about different
6 elements of it, you know, does it happen often, do you
7 understand the message, things like that, to see how the
8 process works.

9 We can also do that in a focus group
10 environment, right? We can ask a group of people, how
11 does it work in your level, how does it work in your
12 department. Okay, so, now we have people's perceptions
13 of what they think about communication.

14 We can look at their organization's procedures
15 about communication. Some organizations have very
16 specific procedures about how they're going to
17 communicate, their strategy for communication. Then we
18 can also use our rating scales to get another way for
19 people to give us their perception about communication in
20 a behavioral context. We can have a survey and ask them
21 about communication.

22 But ultimately, after they've told us what they
23 think, after they may have filled out a survey about what
24 they think, after they may have filled out a scale about
25 what they think, the only way we're really going to

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1 understand what they think is by watching their behavior
2 and what they do. And, so, we need to be able to go in
3 and observe, does that communication occur the way people
4 perceive it to occur.

5 DR. WINOKUR: Right.

6 DR. HABER: That is really key, and I think too
7 often we don't do that. But we also need the right
8 people to do that. We need people that are trained to
9 observing that behavior and understand what they see.

10 DR. WINOKUR: Thank you for that point. I
11 appreciate it.

12 You've had a lot of experience over the years.
13 You've worked with a lot of organizations. Hopefully
14 you've seen some of them take their safety culture and
15 improve it dramatically. And, so, based on this
16 experience, what did you see? What was the thing that
17 kick-started it that started to make a change and move in
18 the right direction and build momentum to improve the
19 safety culture?

20 DR. HABER: Again, I've seen some of the
21 different models. I saw the Davis-Besse model that used
22 a crisis management model to start to get their change
23 going. And I think they did make some improvement over
24 the years. I don't know where they are right now. I
25 haven't seen them in a while, but they did.

1 But I really think the ones that stick with me
2 the most that I try to encourage people to think about is
3 the engagement of the organization. When people can
4 rally around the fact that, hey, we've got a need here,
5 we've got an issue, we want to make it better, we want to
6 improve, then I think that really works. And there are
7 many organizations out there where people really want to
8 succeed. I mean, they really want their organizations to
9 work. They don't like working in dysfunctional
10 organizations. They don't like working in potentially
11 unsafe organizations. They want it to work.

12 And, so, you need the right -- the right
13 management team, and I don't just mean one leader, you
14 need a team, because you can have a good leader and if
15 his or her direct reports are not on the same page,
16 you're not going to be able to succeed. So, you need a
17 team of people, and you need to get those people in the
18 workforce really engaged.

19 And I can think back on one example where at
20 the time it was very unique, but a team was put together
21 with a lot of people from different levels in the
22 organization, and they really guided that organization to
23 change because they could bring their perspective on how
24 it was going to impact their level, their department in
25 the organization. And they wouldn't succeed unless they

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1 had all kind of agreed that this was the way they were
2 going to go.

3 And, now, that takes a huge commitment. It
4 takes managers that understand that maybe they don't have
5 all the answers and that they don't have all the power,
6 that they need to get other people involved. And not
7 everybody can do that.

8 DR. WINOKUR: Thank you.

9 MS. ROBERSON: Dr. Haber, along the lines that
10 you were just speaking of, you know, I've always believed
11 that the workforce responds to the signals demonstrated
12 by its leader. But I guess I have to ask you is, you
13 know, and I've never really worked anywhere, whether it
14 was public or private, where I wasn't convinced that the
15 workforce was committed to the mission, no matter what
16 that mission was. It's their livelihood; they were
17 committed to the mission.

18 But I do have to ask you, could this strong
19 commitment to the mission become an enabler for poor
20 leadership? In other words, are the workers successfully
21 accomplishing their tasks in spite of their managers, the
22 way they're comfortable doing so, rather than because of
23 their leadership and can that success seriously mask
24 management problems or poor cultural problems?

25 DR. HABER: That's a great question. It can

1 sometimes mask, but I think it will only be short-term.
2 I think that at some point you can be very mission-
3 focused, and you can succeed, but day in and day out, you
4 know, people may not be happy in the organization. They
5 may not respond well to certain things because they don't
6 have that appropriate leadership, so they may succeed in
7 spite of their leadership or their management, but that's
8 not necessarily going to create the right culture, if you
9 will, in terms of the values and beliefs. That becomes a
10 very outcome-oriented organization, and in my experience,
11 it's not necessarily equated with a positive safety
12 culture. It's different.

13 And what I worry about in those organizations
14 is that often there's a complacency that develops, that
15 they can do it, you know, we've managed it, we're meeting
16 our mission, we can do it. And that complacency can
17 result in perhaps a low-level event that could have very
18 high consequence. So, you're into the low probability,
19 you know, significant consequence event because they
20 didn't have management to think about that and they
21 became a little complacent in being able to manage their
22 mission without some of these other aspects.

23 MS. ROBERSON: You said something during your
24 presentation which I thought was very interesting when
25 you talked about, you know, train, make an announcement,

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1 do some training, change the processes.

2 DR. HABER: Mm-hmm.

3 MS. ROBERSON: And I think one of the
4 challenges, and I'm going to ask you as an expert in
5 assessing safety culture and I'm going to ask Dr.
6 Dillinger later as a practitioner, when you have an
7 organization who -- that has very rigid procedural
8 requirements because of the potential consequences, yet
9 you also have a necessity for innovation, which means
10 less procedure, what have you -- how have you seen
11 organizations struggle with where they have both the need
12 for very tight and specific procedural process controls,
13 as well as room to innovate because they're not working
14 from blueprints, they're creating stuff as they operate?

15 DR. HABER: Yeah. We used to call that
16 routinization. There was like a routine that people had
17 to develop. Sometimes you see that in nuclear also with
18 operators and highly proceduralized tasks. But the key
19 to routinization is, while it's important, you have to be
20 able to question and to challenge. And you have to be
21 able to create an environment -- management has to create
22 an environment, the work -- the organization has to
23 create the infrastructure so that people can challenge
24 and question without it compromising the procedure or the
25 process or the mission and yet be respected by the

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1 organization, not be seen as making problems, being a
2 troublemaker.

3 Those are very key. You have to create the
4 right work environment for people to feel comfortable to
5 do that and not for people to believe that they're
6 compromising anything else in the organization. And
7 there are organizations that do that very well.

8 I know back in the days when the higher
9 liability organization work or Todd LaPorte and Karlene
10 Roberts, you know, and they went out and looked at the
11 aircraft carriers, and you could have a mechanic that was
12 working on the deck of that carrier basically stop a
13 plane from landing because he didn't think the situation
14 was right or because something was on the deck. And that
15 -- and he was able, you know, to do that, and nobody
16 questioned it. Everybody understood the importance of
17 that, and that was something outside of the procedure.
18 So, I think it -- you know, it can be done in the right
19 environment.

20 MS. ROBERSON: Okay. And then, you know, I've
21 already talked to you a little bit about self-assessment,
22 so I have to admit I'm not a true believer that when it
23 comes to behaviors and culture that self-assessment is a
24 reliable tool. You talked a bit about that in your
25 presentation and combining it. But, you know, I just

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1 want to ask you, can members of an organization be
2 expected to reliably recognize the significance of
3 weaknesses in their own patterns of behavior?

4 DR. HABER: I think it goes back to that it's
5 hard to look in the mirror. But I think that there are
6 ways that they can. And in the interest of continuous
7 improvement for the organization, they need to try. And
8 I think if they are presented, if they're trained, if
9 they get the right methodology, I think they can start.
10 And I think then it becomes a process over time and they
11 can develop those tools. There are people that have been
12 trained that understand the methodology and they can do
13 that.

14 As I said, I think that a good thing to do, you
15 can do self-assessments over a periodic time, but at some
16 point down the road it might be good to do an independent
17 assessment just to calibrate those results and make sure
18 that they are being critical enough. And if not, then
19 pick up on the independent assessment and move on from
20 there. But I think it's a good reality check to have an
21 independent assessment but not in place of a self-
22 assessment. I think self-assessment is important for the
23 organization. It's part of creating that more proactive
24 environment and learning environment.

25 DR. WINOKUR: Thank you. Let me ask you about

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1 a particular issue that you can see at the Department of
2 Energy as well as NASA. These are what people have told
3 me are called virtual organizations. You may know the
4 term better than me, but basically you've got a
5 department, it's contracting out most of its work and
6 it's got a series of contractors that are performing the
7 work.

8 I mean, the challenges of building a safety
9 culture in that organization, to me, seem to be very
10 complex because not only do you have the department and
11 the federal function, but you've got all these
12 independent companies and contractors. I mean, where
13 would you begin the process of improving the safety
14 culture if I said improve the safety culture at the
15 Department of Energy? I mean, what would that even mean?

16 DR. HABER: Is that a challenge?

17 DR. WINOKUR: Well, I don't have the resources
18 to pay you to fix it up, but I mean improve it is the
19 right word, improve it.

20 DR. HABER: Yeah. That is a huge challenge in
21 my experience for the Department of Energy as well as
22 other organizations. And I think that one of the first
23 steps, which I don't see, is a similarity across the
24 complex, if you will, across the Department, of
25 expectations, of some of the values, some of the

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1 standards. I see organizations that are that large often
2 working in silos, and they work each within their own
3 office in this case or within their own department or
4 division in a larger corporation. And there's something
5 missing in the direction from the top.

6 And in the standardization of processes that
7 manage those contractors, that can create at least a
8 framework in which the contractors can try in their own
9 organizations to meet those expectations and standards.
10 And I think that that's -- there has to be a set of
11 expectations from the top to create some of those shared
12 values and expectations for all of the organizations.
13 So, across the complex and then within the managing of
14 the contractors, I just don't think that's very clear.

15 DR. WINOKUR: I'm not defending anybody here,
16 but of course we're talking about a department where we
17 have great research and development labs and production
18 labs. I mean, it's very diverse, the different functions
19 that are taking place, and each of those ventures has
20 their own culture. I mean, a researcher's culture is a
21 little bit different than somebody on a production line,
22 right? So, it's -- I'm not defending or saying
23 anything's right or wrong; I'm just saying that it does
24 seem to me to be especially complex.

25 DR. HABER: Nobody is telling -- I'm not

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1 suggesting that you prescribe what the culture within
2 those different organizations be. I'm not prescribing
3 that a defense facility is going to have the same culture
4 as a research laboratory. What I am suggesting is that
5 there needs to be some consistency of the expectation and
6 how the organization meets it is up to the type of the
7 organization. But that consistency and expectation is
8 sometimes missing. So, the way a defense facility is
9 going to meet that expectation and a research laboratory
10 is going to meet it may be very different. But somewhere
11 there has to come to a convergent point at the top if
12 you're all working in the same organization.

13 DR. WINOKUR: Okay, thank you. Let me get back
14 to things that you measure again. And this is something
15 that we actually dealt with. Obviously, you're looking
16 at trends. You want to see the trends improve to see
17 safety culture or anything improve over time, right?

18 DR. HABER: Mm-hmm.

19 DR. WINOKUR: And when we talk about safety
20 culture, there were surveys done, and those surveys said
21 that 95 percent of the people felt they could raise
22 safety concerns; and 5 percent said they couldn't. And
23 the question was, was that a good -- was that good or
24 bad. So, obviously, if I told you that 95 percent of the
25 people in this room would get home safely tonight, no one

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1 would agree with that, right? And we don't permit 95
2 percent of the jets to make it safely to the airports
3 they're going to. But we would permit 95 percent to land
4 -- maybe land on time.

5 So, what do these numbers really mean to us?
6 What are we looking for in terms of establishing this
7 culture? Are there any goals or things like that you
8 think we should keep in mind?

9 DR. HABER: I think for me the goal is to see
10 continuous improvement. I think the goal for me is not
11 the numbers so much as the desire or the behavior to want
12 to continue to improve. One of the leading indicators of
13 a safety culture that will start declining is
14 complacency. It's the idea that, okay, I'm at 95
15 percent, that's as good as it gets, so I can just kind of
16 coast along now. It's that attitude. It's not getting
17 the 100 percent. It's not having the attitude that I
18 need to continuously improve and to keep it there.

19 That's the key. That's the sustainability
20 piece because the numbers -- you know, even the 5
21 percent, in my mind, it only takes one or two people who
22 are not going to identify something that can create a
23 situation that can really hurt you or hurt the
24 organization. So, I think it's the idea that, hey, I
25 have to continuously keep up my desire to improve.

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1 DR. WINOKUR: Thank you. My final question is
2 do you have any suggestions about how an oversight
3 organization like the Board could adjust its oversight
4 efforts associated with trying to identify and make
5 helpful suggestions about improving safety culture? What
6 would we do from our perspective?

7 DR. HABER: Well, I think we've touched on it a
8 little bit already. I think there needs to be that idea
9 that from the Defense Board's point of view that the
10 expectations are pretty clear at the top and that the
11 standards and those expectations are consistent. How
12 each organization gets to it may be different.

13 I also think that they have to be small steps
14 recognized. I think too often we're just looking for the
15 big change, the big picture. We don't recognize the
16 small steps of success, so the Board might be very
17 interested in looking at a way of reinforcing the small
18 successes, if you will, or recommending the use of those
19 types of activities to help the continuous improvement
20 and to help look -- to move performance forward in the
21 future.

22 The Department of Energy is difficult. It's a
23 self-regulated organization. It's not the commercial
24 nuclear industry. And that has a lot of challenges with
25 it. I think sometimes maybe some other external reviews,

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1 some outside reviews, might be important to help the
2 Board in its oversight.

3 DR. WINOKUR: Okay. Thank you very much. Do
4 you have any additional questions?

5 MS. ROBERSON: I do have one additional
6 question. We haven't really talked much, and in your
7 experience I think it would be very helpful about the
8 impact of external forces, not like, okay, we're an
9 external organization, not in the formal roles, but
10 external factors that I would characterize as maybe
11 funding, facility age and condition, things that not
12 necessarily are easily resolved and how those get
13 factored into a scenario where leadership is trying to
14 change the expectations and character of an organization.

15 DR. HABER: I think that's a great question,
16 especially for this department. There are a lot of
17 external factors that the organizations have no control
18 over: political, funding, whatever it might be. And the
19 recommendation there is that the organizations try to
20 manage change within their control. We've seen
21 organizations in the complex that didn't put the
22 priorities on the simple things that they could have
23 changed. It didn't take a new bill or a new act of
24 Congress to change them. It was a function of management
25 making the decision and having the leadership to do that.

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1 So, I think if organizations would just manage
2 what they can manage and what they can control and make
3 that clear to the people in the organization, that would
4 go a long way to getting people to do what they need to
5 do.

6 MS. ROBERSON: Okay. Thank you.

7 DR. HABER: Mm-hmm.

8 DR. WINOKUR: All right, with that, we want to
9 thank you very much for that presentation, Dr. Haber, and
10 for answering the Board's questions.

11 I think we're going to move on to the next
12 presentation by Dr. Morrow. Welcome.

13 DR. MORROW: All right, good morning. Thank
14 you, Chairman Winokur and members of the Board. I'd like
15 to also acknowledge my NRC colleagues who have joined me
16 at the meeting today: Catherine Thompson from the Office
17 of Enforcement and Molly Keefe and Dan Merzke from the
18 Office of Nuclear Reactor Regulation. Whereas Dr.
19 Thompson and I are responsible for safety culture policy,
20 Ms. Keefe and Mr. Merzke are responsible for the
21 implementation of safety culture and the NRC's Reactor
22 Oversight Process, and some of which I will be talking
23 about today.

24 In this presentation, I'll give a brief
25 overview of the NRC and the history of safety culture at

1 the NRC. Then I'll talk about the NRC's safety culture
2 policy statement and how safety culture is considered in
3 the NRC oversight process, including cross-cutting
4 aspects and substantive cross-cutting issues, our
5 graded approach to safety culture assessments, and
6 allegation trends and chilling effect letters. And then
7 I'll talk -- briefly outline how safety culture concerns
8 are followed up on at the NRC.

9 The Nuclear Regulatory Commission was
10 established as an independent regulatory agency in 1974,
11 with the mission to ensure the safe use of radioactive
12 materials for civilian purposes. That is accomplished
13 through licensing, inspection, and enforcement.

14 The concept of safety culture was first
15 introduced to NRC policy documents in 1989, following
16 reports of operator inattentiveness and unprofessional
17 behavior while on duty at a nuclear power plant. This
18 prompted the Commission to release a Conduct of Nuclear
19 Power Plant Operations policy statement, which addressed
20 expectations for behaviors of nuclear power plant
21 operators in the control room and managers of nuclear
22 power plants.

23 In 1996, following reports of workers being
24 retaliated against for whistleblowing, the Commission
25 released a policy statement on the freedom to raise

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1 safety concerns without fear of retaliation. You'll also
2 see the term safety-conscious work environment I know
3 you're familiar with. And that was directed at all
4 licensees and certificate holders and really focused on
5 making sure there was an environment where workers felt
6 comfortable raising safety concerns without fear of
7 retaliation.

8 In 2002, the Davis-Besse reactor head
9 degradation event. As a result of that event, there were
10 a lot of changes made to the oversight process that the
11 NRC used, including revisions to the ROP to more fully
12 incorporate safety culture. And I'll talk about some of
13 those changes and what it looks like now coming up in the
14 presentation.

15 Then in 2008, our Commission directed the NRC
16 staff to develop a policy statement that focused more --
17 on safety culture more broadly than just safety-conscious
18 work environment that applied to all licensees and
19 certificate holders -- the 1989 policy statement only
20 applied to nuclear power -- and that also considered both
21 safety and security. And that began an effort to develop
22 a safety culture policy statement. We worked with our
23 stakeholders and our different regulated communities to
24 really get ownership for the contents of the policy
25 statement.

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1 That policy statement was finalized in 2011,
2 and the policy statement basically sets forth the
3 Commission's expectation that individuals and
4 organizations maintain a positive safety culture that's
5 commensurate with the safety and security significance of
6 their actions. So, there's flexibility there in terms of
7 the different types of functions that our regulated
8 communities have.

9 Within the policy statement, we also included a
10 definition of safety culture, as you can see on this
11 slide. It focuses on safety culture as being about core
12 values and behaviors and a collective commitment to
13 emphasize safety over competing goals.

14 Also included in that policy statement was a
15 list of nine traits that are -- in talking with our
16 stakeholders seemed to be important in a positive safety
17 culture. So, traits like leadership safety values and
18 actions; continuous learning; questioning attitude. This
19 is basically the framework that was adopted as part of
20 the policy statement as Dr. Haber talked about different
21 frameworks.

22 Also, I'll note that there are nine traits
23 included in the policy statement, but when we undertook
24 the Common Language Initiative in the nuclear power
25 industry, which was to basically align the nuclear

1 industry safety culture terminology with the NRC's
2 terminology, decision-making was added as an unofficial
3 tenth trait. So, that is also included as part of the
4 common language.

5 The NRC's approach to safety culture is founded
6 on the philosophy that licensees bear the primary
7 responsibility for safety. So, therefore, they bear the
8 primary responsibility for their safety culture. As a
9 result, the NRC's Safety Culture Policy Statement is an
10 expectation; it's not a regulatory requirement.

11 The NRC does consider safety culture within the
12 Reactor Oversight Process for nuclear power reactors, and
13 the NRC also assesses safety culture, but it's primarily
14 as a result of some event or decline in safety
15 performance. The NRC has different levels of inspections
16 activity based on our overall assessment of licensee
17 performance.

18 The Reactor Oversight Process is the NRC's
19 performance assessment program for operating nuclear
20 power reactors, and the inputs for that process are
21 derived from licensee performance indicators -- these are
22 submitted by the licensee to the NRC -- and NRC
23 inspection findings. Licensee performance is evaluated
24 continuously through our resident inspector program and
25 ongoing baseline inspections. It's also evaluated

1 systematically through planned inspections and also at
2 midyear and end-of-year assessment meetings.

3 The NRC assigns each licensee to a column in
4 the ROP action matrix just based on their performance, so
5 based on those inputs from the performance indicators and
6 the inspection findings. And it's the action matrix
7 placement that determines the level of NRC oversight for
8 each licensee facility.

9 This is a depiction of the Reactor Oversight
10 Process. As you can see, it's founded on the NRC safety
11 mission with three strategic performance areas and then
12 seven cornerstones of safety. For each of these
13 cornerstones, there are performance indicators and
14 inspection procedures associated with these cornerstones.
15 And then at the bottom you'll see the cross-cutting areas
16 of human performance, safety-conscious work environment,
17 and problem identification and resolution. It's there
18 that safety culture comes into play within the Reactor
19 Oversight Process.

20 And part of the revisions made to the ROP in
21 2006 following Davis-Besse was to further kind of flesh
22 out the cross-cutting aspects that are underneath and
23 embedded in those cross-cutting areas. So, things like
24 problem identification, problem resolution, resources,
25 work processes, communication, things of that nature are

1 the cross-cutting aspects that appear under the cross-
2 cutting areas.

3 And the way they're used in our inspection
4 process is when there is an inspection finding, some
5 performance deficiency associated with a regulatory
6 requirement or a licensing condition, then our inspectors
7 will evaluate that inspection finding to see if there are
8 cross-cutting causal factors that may have related to
9 that finding. Those they then assign a cross-cutting
10 aspect to. For example, a cross-cutting aspect in
11 resources, that that was some underlying finding --
12 underlying causal factor associated with the finding.

13 Now, I mentioned before the Common Language
14 Initiative. So, in 2006 when the ROP was revised and
15 those cross-cutting aspects were fully developed within
16 the ROP framework, at the same time, the nuclear industry
17 had their own framework for talking about safety culture:
18 impose guidance for a strong nuclear safety culture,
19 principles for a strong nuclear safety culture. And for
20 the most part, the way the NRC talked about safety
21 culture and the way INPO and NEI and the nuclear industry
22 talked about safety culture, they were compatible, but we
23 were using different terminology. And, so, that created
24 a lot of confusion when it came to talking about safety
25 culture concerns. And Dr. Haber would go into an

1 organization; she would have to use two frameworks to
2 talk about the results. And, you know, it just added to
3 confusion that wasn't necessary.

4 So, from 2011 to 2013, the NRC had a joint
5 effort with the Nuclear Energy Institute and the
6 Institute for Nuclear Power Operations to develop a
7 common language around safety culture. And the results
8 of that were 10 traits of a healthy safety culture, the
9 nine traits that appear in the policy statement plus
10 decision-making, 40 cross-cutting -- 40 aspects that are
11 embedded within those traits, and those are the
12 performance characteristics representing those traits.
13 And then numerous examples underneath those aspects.

14 Now, INPO and NRC have different goals. INPO
15 focuses on excellence; NRC is a regulatory agency
16 focusing on adequate protection. So, if you look at NRC
17 documents with the common language incorporated, you'll
18 see that INPO has a few more aspects than what is
19 included in the Reactor Oversight Process. And that's
20 because we realize that, you know, there are some things
21 that are important in a safety culture that really kind
22 of focus on that excellence and so they might not be
23 appropriate for inspection purposes. They might not be
24 appropriate for adequate protection. They're still
25 important.

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1 We want to emphasize that they're important.
2 They're included in our common language document, but
3 they are not necessarily part of the Reactor Oversight
4 Process. So, as of January 2014, that common language
5 has been implemented and those cross-cutting aspects are
6 what you'll see as part of the Reactor Oversight Process.

7 So, as I mentioned previously, the cross-
8 cutting aspects are assigned to NRC inspection findings
9 when there are performance deficiencies that have
10 potential cross-cutting factors. In addition to just
11 assigning these cross-cutting aspects to inspection
12 findings, the NRC also considers the accumulation of
13 cross-cutting aspects.

14 And the way that works is basically if there
15 are four or more cross-cutting aspects within a set time
16 period, and there are different -- some different
17 criteria for that that I won't necessarily get into right
18 now, the NRC calls that a cross-cutting theme, four or
19 more. And if during a mid-cycle or end-of-cycle
20 assessment meeting the NRC has concerns about the
21 licensee's progress in addressing the issue, then they
22 may assign what's called a substantive cross-cutting
23 issue (SCCI).

24 Now, cross-cutting aspects and SCCIs may
25 indicate a potential degraded safety culture and warrant

1 further evaluation, but I do want to stress here that the
2 NRC does not make evaluative statements based on cross-
3 cutting aspects or substantive cross-cutting issues.
4 That's only done as a result of safety culture
5 assessments performed by qualified staff. So, these are
6 just what we use as indicators, potential cracks that
7 really need to be paid attention to before larger issues
8 develop.

9 The NRC's approach to safety culture assessment
10 is graded. And basically the extent of an NRC safety
11 culture assessment is based on a licensee's placement in
12 the ROP action matrix. There are some exceptions to
13 this. For example, assessments can also be performed to
14 address longstanding substantive cross-cutting issues or
15 to follow up on specific allegations or allegation
16 trends.

17 But within the Reactor Oversight Process, the
18 scope and complexity of the assessment increases with
19 increased oversight. And the assessment focus may be
20 tailored to whatever was the initial identified
21 performance deficiency. So, for example, the assessment
22 focus may be tailored to specific departments or perhaps
23 more heavily focused on specific areas of safety culture
24 like safety-conscious work environment. So, that
25 flexibility is given in terms of developing the

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1 assessment process.

2 This is a depiction of the Reactor Oversight
3 Process Action Matrix, so this is what I was talking
4 about with the different columns of regulatory response,
5 basically. So, a licensee is evaluated and placed into
6 one of these columns in the ROP Action Matrix, and the
7 NRC's response, the level of NRC oversight, is based on
8 their placement in this action matrix.

9 So, in Column 1, that's just our baseline
10 inspection program. And it's depicted in green. If a
11 licensee were to have some performance deficiency, a
12 performance indicator that's below a threshold or
13 particular inspection findings, they may go to Column 2
14 of the action matrix. And at that -- in Column 2, we
15 have an Inspection Procedure 95001 that includes aspects
16 of safety culture in terms of having inspectors verify
17 that the licensee's root cause appropriately considered
18 safety culture.

19 Now, if the licensee were to go into Column 3,
20 the Degraded Cornerstone column, then the next inspection
21 procedure would have us independently determine whether
22 there were weaknesses in safety culture, safety culture
23 was a root or contributing cause. At the same time,
24 depending on the performance deficiency, we may ask the
25 licensee to conduct an independent assessment of safety

1 culture.

2 In Column 4 of the ROP Action Matrix, we would
3 definitely request the licensee conduct an independent
4 safety culture assessment, and the NRC would also conduct
5 its own independent graded safety culture assessment
6 based on the results of the review of the licensee's
7 independent assessment.

8 So, what that looks like is there are four
9 basic steps to an NRC independent safety culture
10 assessment. First step, and this is per our Inspection
11 Procedure 95003, we would evaluate the licensee's third-
12 party safety culture assessment. We would do that by
13 reviewing the methodology, reviewing the results, and
14 making sure that the conclusions drawn accurately reflect
15 the results that we see from the data presented and also
16 look at how is the licensee responding, what kind of
17 corrective actions are they developing based on how
18 they're reading the results of the assessment.

19 We would then determine the scope of our NRC
20 assessment based on those results. So, this could range
21 from a limited focus to a full-scope assessment. It's
22 partially based on our confidence in the reliability and
23 validity of the safety culture assessment that was
24 performed and also our evaluation of how the licensee is
25 responding.

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1 What can also be factored in is how much time
2 has passed since they were asked to do the assessment and
3 when we're going onsite for the inspection.

4 Our NRC assessment includes multiple methods,
5 document reviews, behavioral observations, interviews,
6 focus groups. And the assessment plan is tailored to the
7 site, so we look at how large is the site, what would be
8 an appropriate sample size. Those things are all very
9 focused on the site and their performance deficiencies.

10 Then we would conduct the assessment; identify
11 and document safety culture themes in the inspection
12 report; and also evaluate whether the licensee's planned
13 and completed corrective actions seem to address the
14 themes that we saw in our safety culture assessment. And
15 that's where we would then, through the inspection report
16 and conversations and dialogue with the licensee, talk
17 about are there areas that still need to be addressed,
18 are there safety culture themes that we've seen, are
19 there concerns that we have that don't seem to be
20 addressed by the existing corrective action plans.

21 Another area where safety culture comes into
22 play in the NRC's oversight process is through
23 allegations and what we call chilling effect letters. A
24 chilling effect is basically when something happens that
25 results in a perception that raising safety concerns is

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1 being suppressed or discouraged. This could be a
2 specific event of discrimination, so someone is
3 discriminated against for raising a safety concern; as a
4 result, everyone in their department is afraid to raise a
5 concern for fear of the same response.

6 It can also be from a culture perspective more
7 about smaller patterns in behavior. So, there are cues
8 that the people in this department are picking up on that
9 if they were to raise a safety concern to their
10 management then they would not receive a very positive
11 response. And these can be low-level things. And the
12 NRC might pick up on them through allegation trends. So,
13 we might see particular trends in the types of
14 allegations we're receiving from a particular licensee
15 that tells us that we need to investigate further.

16 If through investigations and follow-ups we are
17 concerned about the licensee's safety-conscious work
18 environment, then we may issue what is called a chilling
19 effect letter. And what this does it's a very public
20 notification to the licensee, to the licensee's
21 employees, to members of the public that there is a
22 concern that we would like to know how the licensee is
23 going to address it. So, it's -- the objective of a
24 chilling effect letter is to say very publicly that we're
25 aware that something is happening; we are concerned; and

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1 we'd like the licensee to respond, also in a public
2 manner to talk about how they're going to address this
3 concern.

4 In terms of follow-up on safety culture
5 concerns, whatever process is being used, whether it's
6 the substantive cross-cutting issues process, our
7 supplemental inspections, our safety culture assessments,
8 or our allegations program, the NRC is going to document
9 those concerns publicly through a request for
10 information, through inspection reports, mid-cycle or
11 annual assessment letters. And the licensee responds to
12 those communications with planned corrective actions.

13 And this is not necessarily a set procedure for
14 how safety culture concerns are handled but how all
15 concerns are handled. And it really depends on what is
16 the issue that is being addressed. The NRC and the
17 licensee may then enter into agreements for specific
18 actions, and this could be in the form of confirmatory
19 orders, which actually modify the licensing agreement
20 with the NRC, so now it becomes part of the licensing
21 condition; also in the form of confirmatory action
22 letters. So, in a confirmatory action letter, there may
23 be actions that the licensee has to take and we must
24 evaluate those actions before the licensee moves back to
25 Column 1 in the action matrix and goes back to a baseline

1 inspection status.

2 The NRC then conducts follow-up reviews and
3 inspections. The criteria for verifying the proper
4 implementation is developed based on those agreed-upon
5 actions. So, it's through dialogue with the licensee
6 that we develop, okay, the licensee develops the actions
7 and we formulate our criteria for closing those actions.
8 And we follow up with reviews, additional inspections,
9 other sorts of things to evaluate the actions.

10 So, to summarize, the NRC communicates safety
11 culture expectations through the Safety Culture Policy
12 Statement. And that's kind of the overarching framework,
13 but it's an expectation. Safety culture considerations
14 are incorporated into the Reactor Oversight Process,
15 through our cross-cutting areas, and the cross-cutting
16 aspects embedded within them, and our supplemental
17 inspection activities.

18 NRC may also address safety-conscious work
19 environment concerns through our chilling effect letters.
20 And licensees respond to those specific concerns with
21 planned actions, and the NRC reviews those actions and
22 conducts follow-up to close the concerns or verify that
23 those actions were implemented.

24 And I'll just encourage you, for more
25 information on safety culture, the NRC has a safety

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1 culture website. And there's also an email that we use
2 to contact safety culture staff in the Office of
3 Enforcement. And thank you for your time today.

4 DR. WINOKUR: Well, thank you, Dr. Morrow, for
5 that presentation. Both excellent presentations so far.

6 I guess I have the first question. Is it fair
7 to say that Davis-Besse, the accident there or the near-
8 miss there, was really the wake-up call in terms of
9 safety culture at the NRC?

10 DR. MORROW: Having not been at the NRC at the
11 time, I will just speak from my impressions. And I think
12 that was definitely a time when safety culture finally
13 appeared more directly in the oversight process. So,
14 before that, maybe there was talk of management issues.
15 It was more talking around the issue. And I think since
16 Davis-Besse we've been a lot more comfortable with
17 approaching safety culture and using that term safety
18 culture.

19 DR. WINOKUR: Can you put Slide 14 back up?
20 This was your slide about the Reactor Oversight Action
21 Matrix. How much do events in Column 4 impact your
22 thinking about safety culture, I mean, and can you give
23 us an example of a couple of things that might appear in
24 Column 4 that you've been concerned about recently? What
25 kinds of events have occurred?

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1 DR. MORROW: I can't think of the specific
2 events. We have had a number of plants in Column 4
3 recently, and they do impact our thinking on safety
4 culture. When we go into the plant to conduct a safety
5 culture assessment, we are constantly finding different
6 ways to look at safety culture. So, it's never the same
7 with every inspection, so we end up tailoring our
8 questions to that site where the root problem was.

9 For example, the most recent one was Brown's
10 Ferry Nuclear Power Plant. They had a fire that resulted
11 in a red inspection finding, a number of issues that got
12 them into Column 4. And we would -- we find different
13 things going on, different kind of root causes of
14 whatever that deficiency was.

15 You know, sometimes it's leadership; other
16 times it's -- what we'll talk about is as a clay layer in
17 management where, okay, when we get there, the leadership
18 seems to understand safety culture and understand the
19 kinds of changes that they want to see, but it hasn't
20 fully trickled down to the line level. And, so, I think
21 with each inspection that we do we have to tailor what
22 we're doing to the circumstances of that site.

23 DR. WINOKUR: So, when you implement the
24 process IP 95003, do you often find a strong linkage
25 between the event that occurred and a problem in safety

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1 culture? Do you see that linkage?

2 DR. MORROW: We see safety culture having
3 contributed to the event. I think there are -- there's
4 not a situation that I can think of personally where we
5 don't see some safety culture weaknesses, and we can, you
6 know, indirectly tie to them, oh, well, you know, because
7 of communication, because of a lack of effective work
8 processes, that that contributed to the event. So, yes,
9 I would say so.

10 DR. WINOKUR: What's your sense of the overall
11 state of safety culture in the licensees -- for your
12 licensees? Do you think they're at a pretty good level
13 right now, pretty high level?

14 DR. MORROW: I think even my personal
15 experience looking at the normative data that exists
16 across different industries that the nuclear industry is
17 -- tends to rate higher on safety culture. Having not
18 had personal experience in every plant in the U.S., I
19 can't say. I think we address the safety culture issues
20 as we see them.

21 DR. WINOKUR: Tell me a little bit about your
22 thinking with respect to the fact that NRC doesn't really
23 get involved until there is a problem. So, you're really
24 trusting your licensees to do the job, to build the
25 safety culture, to obviously perform safe operations. I

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1 mean, it's a very important thing to them, too. They
2 want to make sure that they are successful in their
3 mission, producing their power. But NRC doesn't really,
4 you know, have any central role where they're going to
5 proactively go around the complex and look at safety
6 culture.

7 Is there a thought why NRC doesn't more
8 specifically devote some resources to just trying to
9 integrate at its level and have a team that goes around
10 the complex and just from time to time tries to evaluate
11 what the safety culture of the licensees is?

12 DR. MORROW: Yeah, and that is purposeful, and
13 it's part of the reason why we chose to have a Safety
14 Culture Policy Statement. It's not a regulation. And
15 that is because of the philosophy that safety is the
16 licensee's priority -- safety is the responsibility of
17 the licensee.

18 And, so, I think we acknowledge that as a
19 regulatory agency if we are too invasive, we can do more
20 harm than good, and that especially with safety culture
21 there's a strong element of ownership for that culture.
22 And if we were to go and mandate specific requirements,
23 go in and mandate, you know, expectations for culture in
24 more of a prescriptive way, then we would be doing more
25 harm than good.

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1 DR. WINOKUR: All right. Well, let me ask, do
2 you -- do your licensees, in your opinion, share their
3 safety culture experiences with each other? I mean, do
4 they all benefit from each other? Is there, through INPO
5 or what other organizations, do you think they have a
6 pretty good process in place whereby they share their
7 collective knowledge and improve safety culture?

8 DR. MORROW: Yes, I do think so, mostly through
9 the Institute of Nuclear Power Operations (INPO). They
10 have even just recently engaged in a voluntary effort to
11 institute a continuous monitoring process in safety
12 culture where they have monitoring panels. They do
13 regular self-assessments. They've also committed to the
14 Institute for Nuclear Power Operations to do biennial
15 safety culture assessments.

16 So, I think in terms of the nuclear industry in
17 particular there is a strong framework through the
18 industry organizations where they're sharing information,
19 they have resources to do independent assessments, and
20 they have guidance and frameworks to perform more ongoing
21 monitoring.

22 DR. WINOKUR: Yeah, I think that's obviously a
23 very valuable thing. Let me ask you the question I asked
24 before to Dr. Haber about it says in your definition of
25 safety culture that you emphasize safety over competing

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1 goals. What does that mean?

2 DR. MORROW: You know, and I think that's
3 somewhat of a recognition that safety using the term
4 "overriding priority" was somewhat problematic, and
5 emphasizing safety over competing goals is maybe a more
6 balanced way to say it. But still, the definition we're
7 using for safety culture is a normative definition.
8 It's, you know, this is the ideal that we're trying to
9 promote in safety culture. So, it is more of an emphasis
10 on safety over the competing goals.

11 But I'd also echo what Dr. Haber said, that it
12 may seem that safety and production are competing goals,
13 safety and mission are competing goals, but a lot of
14 times the way those goals are competing is through the
15 short-term gains at the expense of long-term gains.
16 Makes sense.

17 DR. WINOKUR: Yeah. Actually, you know, I
18 raised the question -- I mean, I'm sure that safety and
19 mission don't have to be competing goals and they could
20 be integrated together, but the nuclear industry is the
21 one that has coined the phrase "overriding priority."

22 DR. MORROW: Mm-hmm.

23 DR. WINOKUR: I mean, it's coming from your
24 industry group, so obviously that's their perspective,
25 right?

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1 DR. MORROW: Oh, I would agree. Yes.

2 DR. WINOKUR: And NRC, when they use their
3 statement here, emphasizes safety over competing goals,
4 is that NRC's desire to support that statement, or --
5 just trying to see if you agree with the industry that
6 it's an overriding priority.

7 DR. MORROW: I would definitely agree that it
8 is an overriding priority. I was speaking more towards
9 the actual words used in the definition, because when we
10 developed that definition, it was with quite a bit of
11 stakeholder input from our different communities. But
12 particularly for the NRC, we are a regulatory agency, so
13 safety is our overriding priority when it comes to
14 nuclear power.

15 DR. WINOKUR: Right. And you share all the
16 concerns, I guess, that the Department of Energy does. I
17 mean, you've got the public, which is very nervous about
18 nuclear and obviously not accepting of any kind of
19 accident at a nuclear power plant.

20 DR. MORROW: Mm-hmm.

21 DR. WINOKUR: So, is it easy to see the strong
22 linkage between that priority and obviously the mission
23 at any time.

24 DR. MORROW: Right. And we hear that message.
25 Partially for me I think it's promising that we hear that

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1 recognition from our licensees in the industry that they
2 recognize safety as the overriding priority, because
3 without safety, they won't exist.

4 DR. WINOKUR: Thank you. Thank you for sharing
5 that.

6 Ms. Roberson?

7 MS. ROBERSON: Thank you, Dr. Morrow. Thank
8 you for being here and thank you for your comments. My
9 mother, who is a very wise woman, like the three of you
10 are, often told me that she who judges must be prepared
11 to be judged. So, I'd just like for you to talk to me a
12 few minutes. After Davis-Besse, NRC itself undertook a
13 very significant effort to try to understand why it did
14 not see the indicators that led to the circumstances.

15 So, can you just spend a few minutes telling us
16 what were the weaknesses identified out of that, what
17 actions were taken, and which of those have you guys
18 concluded were the most effective or positive actions
19 taken?

20 DR. MORROW: Sure. So, after Davis-Besse, the
21 NRC also convened an internal safety culture task force
22 to look at our safety culture internally. And there were
23 a number of recommendations that came out of that task
24 force, including improving communications about safety
25 culture. There wasn't a really good understanding even

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1 within the agency of what safety culture means. Also,
2 looking at incorporating safety culture more into our
3 strategic framework, into our mission and values, and
4 also making our different avenues of raising concerns
5 more prevalent in terms of helping our employees know
6 where to go in terms of raising different concerns.

7 And many of those have been addressed, although
8 I think for us internal safety culture is -- you know,
9 it's always going to be a work in progress. It's always
10 something that we have to check and adjust. We have a
11 number of resources now available, including a matrix to
12 look at, okay, if you have this kind of concern, here are
13 your different options for raising it.

14 And also more training. We have behavior
15 matters cafes, which are sponsored by our executive
16 director, looking at what kinds of behaviors help us
17 support our organizational culture. What are the
18 behaviors that are expected in our agency?

19 Also, we have a self-assessment process. We
20 have -- since 1998, our Office of the Inspector General
21 has sponsored a Safety Culture and Climate Survey every
22 three years. And we also participate in -- as with other
23 government agencies -- the Federal Employee Viewpoint
24 Survey. And we use both of those surveys to -- most
25 recently in 2012 to develop action plans for our

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1 different offices and also at the agency level to look
2 at, well, where are our weaknesses internally and what
3 can we do, what actions can we take to address them. And
4 we're using the most recent Federal Employee Viewpoint
5 Survey, when we get those results, we'll use those as a
6 check and adjust. And then, you know, it's basically a
7 continuous process for us now.

8 And I think in terms of, you know, what's had
9 the most high impact, what I've seen from my experience
10 is those action plans, those are new that we started, you
11 know, publicizing them more within the agency so that
12 employees can see, oh, for my office, here are the
13 different actions that are being taken. And it makes
14 what is done to make changes in the agency more visible,
15 so that people don't think that, oh, we take this survey
16 and the results go into a black box. So, it makes it
17 more visible what actions are being taken.

18 MS. ROBERSON: Does NRC have a program or
19 process for monitoring its safety culture?

20 DR. MORROW: It would be through those two
21 surveys that I mentioned.

22 MS. ROBERSON: Okay.

23 DR. MORROW: That's our self-assessment
24 process. The Safety Culture and Climate Survey is very
25 specific to safety culture. And then, as you know, the

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1 Federal Employee Viewpoint Survey is more general about
2 organizational functioning, engagement, those sorts of
3 things.

4 MS. ROBERSON: Did you guys make changes to
5 your resident inspector program as a result of that
6 evaluation after Davis-Besse? Do you recall?

7 DR. MORROW: I don't recall.

8 MS. ROBERSON: Okay, okay.

9 DR. WINOKUR: I want to go back to this Column
10 4 again. When you go in and you actually look at the
11 independent safety culture assessment, and I'm assuming
12 Dr. Haber didn't do it, of your licensees, are you often
13 confident when you look at it, do they typically do a
14 very good job? Does your team feel that they're doing a
15 good job in terms of that assessment?

16 DR. MORROW: Right now there's not
17 standardization in terms of for each licensee what
18 process they're using to perform that independent
19 assessment. So, at this point in time, when we go in for
20 every NRC safety culture assessment, we are doing a
21 thorough review of what's been done.

22 For the most part, in my experience, I would
23 say that there are more strengths than weaknesses, but
24 what we do in our review is we look at, okay, for the
25 most part we would expect that there would be multiple

1 methods used to gather data. So, if we see a safety
2 culture assessment, particularly if the plant's in Column
3 4, and it's only a survey, then that right there is a red
4 flag because they're not using multiple methods to
5 collect the data. And, so, that, then, feeds back into
6 our plan for how we're going to conduct the assessment.

7 So, I think there are still weaknesses in terms
8 of using the multiple methods and what they look like.
9 And we're just very aware of those and try to supplement
10 when we go in to do our independent assessment.

11 DR. WINOKUR: So, let's say that there were
12 three licensees in Column 4, and each time NRC went in
13 there you found that same result, that they only used one
14 method to assess the culture and they were falling short.
15 When does NRC or when would NRC make a decision that we
16 need, from our perspective, to be more proactive in terms
17 of making sure that our licensees have safety culture --
18 and have the safety culture that they need or have
19 improved it to the point that they need, acknowledging --
20 this is the discussion we had before -- all the pressures
21 that these plants are experiencing, they're old, they're
22 aging, the workplace is very competitive, even for
23 nuclear with gas and things of that nature.

24 I mean, when would NRC make a decision that
25 they need to be more integrating, more in charge of

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1 what's going on in terms of the licensees when it comes
2 to safety culture? Is that possible for you to think
3 about that?

4 DR. MORROW: I can't speculate what it would
5 take for the NRC to make that decision. I don't think
6 personally it would be, you know, just from my judgment.
7 I don't know -- one thing that we do whenever we go into
8 a safety culture assessment for Column 4 plants is it's
9 documented in our inspection report, the basis that we
10 use to develop our inspection plan.

11 So, if we were going into plants and there were
12 three plants in Column 4 and we were seeing the same
13 deficiencies in whatever they were using for their
14 independent assessment, that would be documented in the
15 inspection report. And that would be something that we
16 would communicate is we are having to do more in-depth,
17 integrated assessments when we go in because of these
18 deficiencies. And that's the way we would communicate
19 with the licensee is, you know, when you're doing an
20 independent assessment, you need to address these
21 deficiencies because they are factoring in to how much we
22 need to go in and do our inspection.

23 DR. WINOKUR: Yeah, I'm just trying to get at
24 the challenge for NASA, for NRC, for DOE. I mean, you're
25 all similar in some ways that you have a large faction of

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1 your workforce that really isn't the federal component of
2 what's taking place. I mean, it's not really what's at
3 headquarters; it's taking place out in the field with a
4 lot of different companies and a lot of different
5 contracts and a lot of different agencies. And I'm just
6 trying to get a sense of how you view that.

7 I don't think it was a question there. Let me
8 ask you something about the Employee Viewpoint Survey.

9 DR. MORROW: Sure.

10 DR. WINOKUR: I read the Trade Press. I mean,
11 we all do every morning, and there's been recently a lot
12 of discussion after Fukushima that the staff at the NRC,
13 which I know is incredibly capable, right, and at the
14 Department of Energy, too, and the commissioners of the
15 NRC haven't accepted all of their findings on Fukushima.
16 Is that a safety -- is that a problem, I mean, between --
17 that NRC is experiencing? Is that something that makes
18 you worry?

19 DR. MORROW: You know what, I'm not involved in
20 the Fukushima activity, so that is something that I can't
21 really speculate on.

22 MS. ROBERSON: Good answer.

23 DR. WINOKUR: All right.

24 So, the last question I have for your is -- and
25 we asked this question of Dr. Haber before -- do you have

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1 any suggestions for the Board, the Defense Nuclear
2 Facilities Safety Board, about how we might improve our
3 oversight of the Department of Energy Defense Nuclear
4 Facilities with respect to safety culture?

5 DR. MORROW: I don't know if it's a suggestion,
6 but I guess what I would just kind of put out there is
7 one of the struggles that we have at the NRC and I think
8 that all oversight organizations have, and it kind of
9 goes back to our philosophy and our use of a policy
10 statement, and that's the factor of ownership for safety
11 culture.

12 And I think that I would caution that as an
13 oversight agency there is kind of a balance that needs to
14 be struck between mandating and prescribing a safety
15 culture, because at that point, what you may be enforcing
16 is a minimum compliance situation. And that completely
17 takes away from the essence of safety culture and that it
18 is an emergent property of the organization, it's
19 embedded in the organization, and if there's going to be
20 sustainable change, then the organization has to be the
21 one to really initiate and drive that change.

22 DR. WINOKUR: Thank you. Thank you.

23 Do you have any other questions?

24 MS. ROBERSON: Uh -- no.

25 DR. WINOKUR: All right, we want to thank you

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1 very much. And I think we'll move on to our last
2 presentation of the morning, Dr. Dillinger.

3 DR. DILLINGER: I think I'm on. Thank you very
4 much, Dr. Chairman and the Board, for inviting me, and
5 thanks for the audience for listening. And I'm learning
6 a lot from my fellow panelists. I'm very happy to be
7 here. I work at NASA, and I came from DOD, where I was
8 in the Air Force.

9 NASA, as you know, has about 17,000 employees.
10 It has 10 centers with other subcomponents, but basically
11 the headquarters is here in Washington, DC. There are 10
12 centers that operate through the United States. Of the
13 17,000 employees, those are government workers, and
14 there's about twice as many contractors as there are
15 government GSs.

16 And, so, that percentage or that proportion
17 used to be a little bit different. Probably 10 years
18 ago, 20 years ago, that proportion would have been about
19 three or four times as many contractors. Now it's about
20 two to one, just as a sort of picture of the workforce.

21 We've been talking about how do you build
22 safety into the organization, and the way NASA has looked
23 at building safety into the organization is starting at
24 the very top with, oh, what's called the NPR 1000.1, and
25 this is where from the very beginning NASA says this is

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1 how we do business and this is the top-level document.
2 And, so, what the directive says is that there are four
3 core values. Those four core values are safety,
4 excellence, teamwork, and integrity. And those four
5 things all come together towards mission success. So,
6 the way we've looked at this -- and this is post-
7 Columbia. Before Columbia, there were three core values
8 and safety was not one of them. Safety was an add-in
9 after Columbia. It is part of the four core values, so
10 that's in all of the documentation and the training and
11 the things that go on within the employee workforce.

12 Those -- and, so, when we talk about safety, it
13 always goes back to it's one of the core values. And the
14 safety programs are built on that. It's not an either/or
15 thing. It's not mission or safety. Safety is part of
16 the mission. Safety is how we do the mission. It's how
17 we are more successful. It's a verb; it's an adverb. We
18 do; we turn the key safely; we launch safely; we go to
19 work and we come home safely. And it's part of how we do
20 business. It's not competing for parts of the business.

21 For the safety culture program, there's a
22 number of ways that we decided to go about focusing then
23 specifically on safety culture, so starting very big
24 picture in terms of the core values and 1000.1, going
25 into the safety area. We focused then on multiple

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1 pathways. The idea was to attack this in as many
2 different ways as we could in terms of assessments, in
3 terms of educating the workforce, and that includes the
4 contractors when we can, that includes an engagement and
5 having multiple ways to engage with the workforce.

6 That includes guidance, and so not depending on
7 just 1000.1 but getting into the other guidance within
8 the agency, the expectations for people's behaviors.
9 That includes, then, communicating and having resources
10 that we can offer as tools to people at those 10 centers
11 that will explain those expectations through media, in
12 other words, posters, websites, checklists, handouts,
13 brochures, all those kinds of things. We wanted to
14 develop a whole section that would provide those.

15 And then in terms of the logistics, and that's
16 the people and the resources and coming together on a
17 regular basis and determining what that basis was -- and
18 telecons -- monthly telecons, quarterly meetings,
19 biannual -- determining what those are and who was going
20 to be there and who's going to sit at the table when
21 those decisions are made. So, those are the logistics of
22 the programming.

23 The idea was to have multiple aspects of that,
24 multiple choices, and to create a toolkit, so if you're
25 the chief of safety, you would have resources to go to.

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1 If you were the center director, you would have resources
2 to go to. If you sat on the ASAP panel, which is
3 equivalent for NASA the Aerospace Safety and Advisory
4 Panel, is who provides insight into NASA's safe way of
5 conducting operations. So, ASAP can look at our
6 resources; employees can look at our resources, our
7 toolkit; our safety people can look at our toolkit. And
8 we wanted to provide those at different levels.

9 And we wanted to focus on all of those levels.
10 In other words, we have targeted interventions for
11 leadership, targeted ways of working with managers, and
12 targeted ways of interacting with employees, different
13 than, you know, a manager person who is a custodian, a
14 person who is an engineer, someone who is really the
15 touch labor, a little bit different than the management
16 expectations and a little bit different than the
17 leadership expectations.

18 One of the first things we did -- when I came
19 on in 2008, and by 2009 we had started working the
20 program. And, so, the program operates from a model.
21 The model is based on James Reason's model. The --
22 you'll see there that this is sort of visually we wanted
23 to instill in people a sense of this is embedded in our
24 DNA, again, safety as an enhancer of how we do business.
25 So, we want everyone to understand this. We want

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1 everyone to do it, to walk it, to talk it, to teach it,
2 to model it, and we want it instilled in the being of
3 every person there.

4 So, that means they're going to know how to
5 report. Reporting culture is part of it. That means
6 they're going to know how to administer a just culture in
7 terms of their decision-making, dealing with expectations
8 or poor performers when that happens, and then
9 recognizing outstanding performance also when that
10 happens. That's all part of that. And making sure
11 people understand what a learning culture is and the
12 importance of passing on information and communication.

13 Looking at a flexible culture, and part of this
14 we've focused on two aspects. There's change management,
15 which is one aspect. There's resilience, which is
16 another. The expectation being that the agency needs to
17 be resilient. The workforce needs to be resilient.
18 There will be bumps in the road. There are external
19 forces that we can't control. The agency and the
20 workforce needs to be resilient. In other words, we know
21 things are going to change. We expect things are going
22 to change. Sometimes we want things to change.

23 When those changes happen, we want it done at a
24 tempo that people can manage. They're not overwhelmed
25 and they're not complacent. We want the tempo to be

1 managed in a way where they can adapt to those changes,
2 and we want them to be capable enough and to have
3 capabilities built into what they do, so that when those
4 changes happen, it's not a threat, it doesn't bring
5 operations to a halt. It's maybe a bump in the road.
6 It's an opportunity to learn. And they feel strong
7 enough, the agency, the organization, the leaders, feel
8 strong enough that we take that in stride and press on.
9 So, the idea of resiliency and change management are part
10 of the flexible culture.

11 Running throughout all of that and connecting
12 all of that is engaged culture, and that is everyone
13 doing their part. That means that a new employee knows
14 how to report things and knows where to go and knows who
15 to talk to and if the person they talk to doesn't respond
16 appropriately they know that's not an appropriate
17 response and they know who they go to next. And if that
18 person doesn't listen, they know who to go to next. And
19 if they feel that there's been retribution, they know
20 what to do about that.

21 And, so, the idea is that everybody is
22 involved, that new hires are involved, managers are
23 involved, supervisors are involved, leadership is
24 involved. And it takes all of those levels. It can't be
25 completely top-driven; it can't be completely bottom-

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1 driven. All of those levels have to be doing their part
2 to make it all work well.

3 One of the things we do in the assessment
4 portion of this is to offer a tool. The expectation is
5 that every center will participate in the assessment
6 cycle once on a three-year basis. Basically one center
7 does their survey in a quarter. Right now we're in the
8 second cycle, so we did the first benchmark cycle from
9 2009 to 2011. We're now in what we affectionately refer
10 to as round two. And, so, round two is about to close
11 out. We have two more centers to go. And of our
12 workforce, we have so far about 8,000, a little bit more
13 now, responses. But we'll probably end up with about 12-
14 or 13,000 responses by the time we're done with round
15 two.

16 That will allow them, of course, to do the
17 things that we want them to do in looking at a standard,
18 standards of performance. The questions all merge with
19 the five factors, so the yellow bars or those sort of
20 peachy-colored bars about reporting culture. Each one of
21 those bars is tied into the five-factor model. That is
22 how we want people to think. We want them to be trained
23 on that. We want them to be thinking those topics so
24 that we have a common language when there's a mishap,
25 when something's gone wrong. We want to be able to talk

1 about it using those terms so that we all understand what
2 we're talking about and can try to do something about it.

3 So, for round one, the questions -- there were
4 20 questions. In round two, there are also 20 questions,
5 but of those questions, 16 of them are different, but one
6 question from each of the factors has remained the same,
7 so that we can look back from round two to round one and
8 see if there's been differences. Has it gotten better?
9 Has it gotten worse?

10 And then also each center adds on at the end of
11 where you see bar 20, if you were sitting at the center
12 getting your out-brief or getting your feedback, there
13 would be questions 21, 22, 23, 24. Each center adds on
14 specific questions to their site. Each place is working
15 on its own different unique aspects of things, and so we
16 build that into the surveys.

17 Once the survey is done, there's a safety
18 culture point of contact at each center. They work in
19 doing the analysis, coming up with their findings,
20 observations, and recommendations. That's work with
21 headquarters. The results are presented to the center
22 director and the senior leadership. The expectation is
23 that they will then brief down through the organization,
24 back through the levels of management and supervision to
25 the employees at like an all-hands or a large employee

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1 gathering or maybe something in their newspaper or their
2 website or one of their publications. We from
3 headquarters don't tell them what they have to do to
4 message it back down, but we do tell them that they need
5 to message it back down.

6 We've started a second component of the
7 program, and that's the educational component. That
8 process began around in 2009. In 2010, we had drafted up
9 our training. In 2011, we started to test it. And in
10 2012, it basically went live. This is a web-based
11 training program. NASA uses a program called SATERN.
12 That's where everybody does their training. This is all
13 the computer-based training, is all hosted in SATERN.

14 So, via SATERN, we have two courses. We have a
15 course that's the Safety Culture Orientation Course.
16 That's for employees. We have a Safety Culture Course
17 for supervisors. So, you don't have to do both. If you
18 want to come to NASA, don't get worried, you don't have
19 to do both of them, but you have to do one of them. If
20 you're a supervisor, the content is the same as the
21 orientation course; however, each course ends with
22 scenarios. The scenarios then have test questions at the
23 end of it. Your supervisor comes in; they're late; they
24 look disheveled; they said they were in a car accident on
25 the way to work. You now do A, B, C, D. You know, I

1 mean, it's those kinds of things. The scenarios change
2 from supervisor to employee, and so that's how the
3 courses differ.

4 This year has been the big push to get our
5 employees to take the courses. We've had great success
6 in three of the 10 centers. And what we've actually
7 found is that as each center does its assessment, if they
8 pair doing their training along with their assessment,
9 that's when we can get into the thousands of people
10 actually doing the courses.

11 When it's up to the safety person or the safety
12 culture POC to get people to take the courses, it's just
13 a lot more work. It is -- at this point, it's not been
14 put out as a requirement that they have to do it. It is
15 up to the center directors. Now, some center directors
16 have made it a requirement, so of the 10 centers, we do
17 have two centers where the center director says I want
18 all my supervisors to take this course. But it's the
19 administrator's belief that that should remain in the
20 decision-making purview of the center director. Right
21 now, we have about 3,000 people who have taken the
22 courses and the training since 2012.

23 Along with that is the third portion of the
24 program, and this is a more detailed, more specific, more
25 -- very much into-the-weeds kind of look. These are

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1 called the organizational safety assessments. They are
2 done at the request of a top-level decision-maker, so a
3 center director needs to request it or a program manager
4 requests it.

5 One of the things -- this is not unique, you
6 all deal with this -- but we at NASA are a highly
7 matrixed workforce. So, we have people like engineers
8 who work in engineering. They are also matrixed into a
9 program like SLS or the Space Launch System. So, they
10 have -- they are serving two masters in some ways. You
11 know, they have a program that they are trying to meet
12 the requirements and deadlines and gates associated with
13 the program. They have their profession and they're
14 trying to meet all of those requirements, as well.

15 So, when we do an OSA, we focus on how -- when
16 we go in, we know that we need to capture the people that
17 are associated with the program, as well as the
18 supporting people who are being matrixed in from safety.
19 For us, the big areas are from safety, from engineering,
20 and from the science areas, like life sciences or the
21 medical people.

22 So, the OSAs are done by request. Right now,
23 we are in the middle of an OSA for Human Space Flight.
24 That came from Mr. Gerstenmaier, who is the head of Human
25 Space Flight. He asked that we take a look at the big

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1 Human Space Flight programs. This is not because there's
2 anything that he feels is going wrong in those areas.
3 This is very much a preventative, proactive look.

4 This was originally -- we discussed it because
5 of the 10-year post-Columbia, and there's, you know,
6 within the safety community we are always very concerned
7 about the swinging of the pendulum. Something happens,
8 over time, there's a lot of resources put into safety.
9 People are put into safety. Inspectors are put into
10 safety. Processes grow. And over time, that can become
11 almost burdensome and the agency has to struggle with
12 that. Then you have problems with budgets and things
13 like that, and then the pendulum tends to swing the other
14 way, so by 10 years later your people are saying we've
15 gotten too far away, now what do we do about it.

16 So, and one of our hopes is to keep an eye on
17 all of that to make sure we are not losing sight, that
18 we're not becoming complacent, that something isn't
19 falling through the cracks. And one of the ways of doing
20 that is to do the OSA. So, that is -- it is a review of
21 all of the historical information. We have continual
22 audits. We have continual assessments. Those are very
23 well embedded in NASA's organizational culture. And, so,
24 everyone is going through that.

25 So, the team reviews the results of those in a

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1 way to try to put all of that together. We look then at
2 -- and there's a lot of effort in terms of building the
3 team, who are the right people to have on the team, that
4 the team is multidisciplinary, it involves people from
5 all of those areas, engineering, the program, life
6 sciences, safety. It brings all of them together.

7 We review the historical information. We go in
8 and do interviews, very much what you've seen from the
9 other presenters in terms of one-on-one interviews, focus
10 groups, behavioral observations, looking at how people
11 are actually performing. As we do our interviews, part
12 of the interview people are actually scoring different
13 dimensions of the organization, and as they -- so we look
14 at the data from that, along with the data we've had
15 previously from their safety culture survey, along with
16 the qualitative feedback we're getting from them in the
17 interviews, and then we put all of that together.

18 Now, the end result of the OSA is different
19 than the survey. So, the general, across-the-board
20 shotgun, you're going to do your survey once every three
21 years. That goes to the center director; it goes to the
22 managers; it trickles down. The OSA is targeted. It
23 goes to the program manager, and it's very much of a
24 crucial conversation discussion between the team leader
25 and the program manager.

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1 There are not very many people there. The
2 original data that is gathered, that is temporary data
3 used only for gathering people's perceptions. All of
4 that is not part of the sit-down discussion. That sit-
5 down discussion is a very frank discussion with the
6 program manager that says we understand on your stoplight
7 charts from people who've come in and looked at you, this
8 is how you look. You're green on this; you're yellow on
9 this; you're good with this; you're okay with this. But
10 this is what we really think is happening in terms of the
11 dynamics going on between your people, in terms of your
12 performance, in terms of how safety is working in your
13 organization, in terms of the safety culture, the whole
14 wrap-up of the safety culture.

15 So, it ends with a in-depth discussion about
16 here's what we really think is going on and here's our
17 recommendation, your team of experts basically here to
18 advise you, and here's the things we think that you
19 should look at in order to make sure everything's going
20 to be okay. So, we've completed two of those programs.
21 We have three more to go this year for Human Space
22 Flight.

23 The next thing that we do in terms of the
24 programmatic for safety culture is to look at guidance.
25 It is really important that there be something in the

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1 guidance that uses the words safety culture. If you're
2 in an organization where if you went into your documents
3 and you put a search and you said safety culture and
4 nothing in your documents comes up with even a mention of
5 safety culture, I think, you know, for us, when I saw in
6 NASA guidance that we didn't have that, you know, we
7 decided consciously that needed to be in there.

8 And, so, 1000.1 talks about safety, but 8700 is
9 the top safety document. That now has a policy statement
10 in there that basically says NASA thinks safety culture
11 is important. And that was important to get that into
12 the safety documentation.

13 Right now, we're very fortunate, and in terms
14 of safety culture, we're very fortunate as an agency. We
15 have an administrator who walks the talk and really
16 understands this. We have an associate administrator who
17 understands this fully. We have a Human Space Flight
18 administrator who is completely understanding of this and
19 believes in this and have seen how it boosts performance.
20 We have a chief of safety who, same thing, so the lineup
21 organizationally of leadership throughout the agency is
22 very strong, very dedicated, very committed to this.

23 But that could change. And, so, it's very
24 important to have discussion and philosophy statements
25 and expectations embedded in the organizational guidance,

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1 so that when there's a change of one of those people all
2 of a sudden that kind of just goes away. We don't want
3 that to happen.

4 So, we're working in terms of looking at the
5 guidance. There is going to be a change. There's going
6 to be an addition into some lower level guidance, that
7 basically will make people doing their survey a
8 requirement once every three years. We're not going to
9 tell them who has to do their survey. We're not going to
10 tell them how they have to score on their survey. But
11 we're going -- but we want them to go through the process
12 of at least asking their work force what do you think
13 about these different dimensions.

14 We expect it to change and to evolve over time.
15 Our workforce today isn't going to be our workforce five
16 years from now or 10 years from now. They're going to
17 have -- the mission is going to change. And hopefully
18 one day we're going to be on Mars, and those will be
19 different sort of things we need to think about. But,
20 really, that's we are thinking about. So, we want it to
21 be stated as that the agency recognizes it's something
22 important without being too prescriptive. It will be up
23 to the centers, though, to become somewhat prescriptive
24 in how they do that.

25 Then, again, we work on the tools, and we want

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1 a whole range of tools available for people. And then we
2 work on the logistics. And the logistics include a
3 working group. That's representation from each of our
4 organizations. We expect them to contribute, and they
5 do. We get them together monthly, at least
6 telephonically. We get together face-to-face where we
7 hash out bigger issues. And we want constant
8 communication going back and forth, headquarters to
9 centers, centers to headquarters. I want that to really
10 be a two-way exchange of information.

11 So, basically, those are -- those are the sort
12 of nuts and bolts of how we have looked at how we want to
13 put together the expectations and the work force from the
14 very top, from the first day in NASA. There are certain
15 expectations. Safety is part of how we do things. There
16 are expectations. Safety culture is important. There
17 are expectations. We expect certain behaviors from you
18 in terms of your safety culture. If you see something,
19 we expect you to speak up. If you're a manager, we
20 expect you to listen. I mean, those kinds of things, we
21 want those embedded from the very beginning. And we know
22 that when there's issues with that, when that's not
23 happening, it's just expected outcome that something's
24 going to go wrong and it's just a matter of time.

25 And, so, if you were to ask me what things

1 should you think about and that are really essential, you
2 know, I would say that there are -- there's a couple of
3 things that are really critical. One is that the
4 organizations say it's important. Two is that there are
5 dedicated resources, full-time, that are dedicated to
6 that in some form or fashion. And the third is to expect
7 that that's going to change over time. It's not going to
8 be the same as it is today. The mission is going to
9 change, and there should be some flexibility built into
10 that that we need to be resilient; we need to expect
11 that; we need to welcome that; we should embrace it,
12 right, so that when it changes we get excited and go, oh,
13 good, maybe we can figure out a better way of doing
14 business. And we want it to be that way. And it's a
15 journey; it's not a destination. Safety culture is a
16 mission enhancer to destinations, multiple destinations
17 over time, but it's really the process, and the process
18 itself is never complete. We never know everything.

19 And I would advise you not to expect that we're
20 going to know everything or you will know everything, but
21 you want to be asking and you want to be paying
22 attention. And, so, those three things I would say
23 critical, with the expectation that we're always going to
24 be working at it.

25 DR. WINOKUR: Thank you very much for that

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1 presentation. I have an initial question. You mentioned
2 the fact that you finally put your safety culture
3 definition into your standard, right? And I think that
4 happened in Change Notice 2 in 2012. Was that
5 challenging for you to get that actually implemented?

6 DR. DILLINGER: I love working for the
7 Government. (Laughter.) So, it was -- it was and it
8 wasn't. It was not as challenging as I thought it would
9 be in actually coming to an agreement on the actual
10 words. It was not as challenging as I thought it would
11 be in vetting it through the multiple layers of review.
12 It was a challenge in just getting it through the
13 different layers logistically and through the system of
14 making those changes.

15 DR. WINOKUR: It's actually surprising. I
16 would have -- when I began to look at your presentation
17 and I was looking at everyone's definition of safety
18 culture, I mean, I would have thought NASA would have had
19 one going back 10 or 15 years because you obviously have
20 a venture that has a lot of risk and a lot of public
21 focus on safety.

22 DR. DILLINGER: Yes. Yes. You would think,
23 wouldn't -- and so that was like a freebie for me, right?
24 It was like, well, what are the things we need to do, Dr.
25 Dillinger? Well, let's start with -- yeah, I mean, yeah.

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1 Yeah.

2 DR. WINOKUR: You said something else that was
3 interesting. You said that you wanted to write it down
4 in case your leadership changed.

5 DR. DILLINGER: Yes.

6 DR. WINOKUR: But do you think that it would
7 survive if you didn't have the right leadership?

8 DR. DILLINGER: Yes.

9 DR. WINOKUR: I mean, would the culture be able
10 to survive without it?

11 DR. DILLINGER: Well, there would be a culture.
12 The question is what kind of culture would it be. And,
13 so, the quality of the leadership matters. It matters a
14 lot. It matters a lot.

15 DR. WINOKUR: Okay. Could you put up Slide 5?

16 DR. DILLINGER: That one.

17 DR. WINOKUR: This one.

18 DR. DILLINGER: Yes.

19 DR. WINOKUR: What did you find? I guess I
20 couldn't -- you know, you talked about the methodologies
21 and --

22 DR. DILLINGER: Sure.

23 DR. WINOKUR: -- the approaches you used, which
24 sounded great, but were there any particular things you'd
25 found in round one?

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1 DR. DILLINGER: There are. And these are --
2 these are results that we've discussed at the agency
3 level, so once we go through the cycle, each center does
4 their -- what they do, and then I present the results to
5 the administrator and to the senior leadership. And, so,
6 we did find some things.

7 So, you know, earlier you had asked about how
8 people rate things in terms of leadership, management,
9 supervisors, employees and how that perspective changes.
10 What you're actually seeing, if you notice this, how this
11 ticks down, and one bar in the cluster is always higher
12 and one -- and then it ticks down and it gets lower and
13 lower and lower. Any guesses what that might be --

14 DR. WINOKUR: We had a different interpretation
15 of that. Thanks for sharing that. We thought your
16 culture was just going to hell. No, so basically they're
17 the different levels of management we're looking at
18 there.

19 DR. DILLINGER: That's exactly right. So, in
20 round one, what I wanted to do to establish -- this was
21 our benchmark year, so to establish sort of where are we
22 starting from with safety culture, we said, okay,
23 reporting culture, we defined it, we said this is what it
24 means. How would you rate this, and then rating one is
25 how does leadership rate it, how does upper-level

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1 managers rate it, how do supervisors rate it, how do you
2 rate it in the worker area.

3 And, so, what you're seeing in that tick-down
4 is a really common phenomenon that happens when all work
5 forces in the -- when I was in the Air Force and we
6 looked at this kind of stuff, we used to call it it's
7 good to be king. And, so, the world looks very different
8 if you're a general officer. If you're a GO sitting in
9 your office and your computer breaks, you know, it
10 doesn't stay broken for very long. You know, when you go
11 to the meeting and you need all of your documents in a
12 file, somebody's putting that together for you. You
13 know, life is pretty good, and people are telling you
14 constantly how good it is. That's just what happens,
15 right?

16 DR. WINOKUR: We're all wondering about
17 employment at NASA now. Yeah. (Laughter.)

18 DR. DILLINGER: Well, what you need to look at,
19 and this is what Dr. Haber is just a marvel at and Dr.
20 Morrow, but people who look at this are -- we're pretty
21 familiar with this, right? So, we actually expect this
22 to happen. And this -- but in a way this is partly how
23 we sort of motivate our workforce, too, right? Like you
24 want people to progress through your agency. You want
25 people to want to become supervisors. You want people to

1 become top-level GSs, SESs.

2 I mean, we want -- you know, it is good to move
3 up in the agency and take on the additional work, along
4 with those responsibilities. And, so, yes, there's
5 benefits to that, but you're also going to work hard to
6 make that happen. And, so, but we want to remember what
7 it was like to be an employee who did not have power in
8 the organization basically and who it's harder to get
9 things done, who it's more easy for them to get displaced
10 or dissociated in some sort of way. It's important to
11 remember that.

12 So, what we would look for in that is what is
13 the delta between those groups. In other words, this is
14 a six-point Likert scale. It goes from about a 5.2 to
15 about a 5.05. You know, or it goes from on the second
16 grouping it goes from 4.99 to 4.8 or something like that.
17 It's not a big difference in -- and there is a
18 difference, but there's not a big difference. I've seen
19 organizations, not NASA, where that difference is strung
20 out like this. And as that -- it doesn't tick down; it
21 jumps down. And now you're looking at a five, you know,
22 versus a two.

23 And in that kind of an organization, there are
24 issues. There's something going on in there. And
25 there's also times where you might see in an organization

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1 it goes the other way. And sometimes that happens and
2 there are different reasons that would drive that from
3 happening. But what you're -- it's expected to actually
4 see it like that. What I'm really looking for is how
5 large are the differences.

6 DR. WINOKUR: Is there anything else you
7 learned from the data?

8 DR. DILLINGER: We could identify what were
9 some of our -- what were the areas, so like just culture,
10 you know, is always a concern.

11 DR. WINOKUR: Right.

12 DR. DILLINGER: Each of the questions has
13 people rate on a scale of one to six, but it also has an
14 open dialog box. And, so, every person who took the
15 survey could make a comment, and that was fully
16 encouraged. And, so, we had literally thousands of
17 comments. So, we spent a lot of time -- and what people
18 often do, especially in NASA, which like on the FEVS, we
19 look at the FEVS.

20 We have other looks that go into different
21 centers. There's a survey called 4-D. There are other
22 kinds of looks that are going on independently as well as
23 our look, but we try to look at all of those together.
24 So, when we look at those open dialog boxes, we're
25 looking for themes in what they're seeing, and we get in

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1 our workforce, because people are generally pretty happy,
2 number one in best places to work, number one on the
3 FEVS, that swept all the categories this year.

4 You know, so generally people are pretty happy,
5 but we get a lot of the what I call "yes, but." And this
6 is where sort of your 95 percent/5 percent question, what
7 does that mean, right? So, our people are happy. How's
8 your work environment? It's great, but. And so the open
9 dialog boxes were important for us when we did the survey
10 because we want to know what those are. We want to know
11 what -- what is the 5 percent or 1 percent or 2 percent
12 or what is -- for people who see things a little
13 differently or say it's really great, but here's
14 something you could do to make it even better. We want
15 to hear those voices.

16 And of our surveys, about -- about 15 percent
17 of the people write comments of our respondents, and of
18 those, about half are positive kind of comments and about
19 half are negative kind of comments. So, it's not all
20 that somebody's angry, I'm going to take the survey and
21 tell them how bad it is and then write what I'm upset
22 about. We really get both. And, so, we look at those
23 for areas that we can improve and areas that we need to
24 relook at.

25 DR. WINOKUR: This is the federal workforce.

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1 DR. DILLINGER: No, no, no. This is -- I'm
2 sorry.

3 DR. WINOKUR: Is this the federal workforce
4 we're looking at here?

5 DR. DILLINGER: Yes. These are the GSs.

6 DR. WINOKUR: These are the GSs, the federal
7 workforce.

8 DR. DILLINGER: The federal workforce, yes.

9 DR. WINOKUR: Okay. All right.

10 MS. ROBERSON: You know, I think Challenger and
11 Columbia were certainly significant events that had an
12 impact in driving the agency to decide to focus on
13 improving the culture.

14 DR. DILLINGER: Right.

15 MS. ROBERSON: With safety culture being one
16 element. But it's been over a decade.

17 DR. DILLINGER: Right.

18 MS. ROBERSON: Leaders have changed. So, what
19 are those elements that are maintaining the momentum to
20 continue to improve in this area, to make changes to your
21 primary directives to focus on safety culture? What are
22 the things that are driving it?

23 DR. DILLINGER: I think people have really come
24 to understand that it matters. And when I say people, I
25 mean, I think people at all levels. I think the

1 leadership understands that. I think the workforce
2 understands that. The workforce understands, you know,
3 if we have a two-man operation going on where this person
4 is supposed to do this and I'm supposed to observe it and
5 sign off on it, it's really important that we do it that
6 way. If we cut corners, it's a risk. It's not just a
7 safety risk; it threatens our existence. I mean, if we
8 perform this poorly and can't execute it, then we
9 threaten what we're really all about.

10 And people have -- people understand that for
11 the most part in the organization, that it really is not
12 helping us when we do that. And, so, people are stepping
13 up to the plate and are continually focusing, are
14 continually asking. It's not to say that people still
15 aren't tempted to cut corners, because what we also tend
16 to do is to put a lot of tasks on them and a lot of
17 expectations on them and to sometimes overburden them to
18 a point where in order for them to do what they are being
19 asked to do, they're going to all start looking at how
20 can I cut something back. And that's where we really
21 want to work with them on the communication aspects.
22 They need to know when to speak up and say this plate is
23 too full; something's going to fall off; we need to
24 relook at these priorities so that I know better what I
25 really need to focus on; I only have so many hours in the

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1 day.

2 MS. ROBERSON: So, are there events or
3 activities that you've detected that are kind of -- for
4 us would be below the screen that allow you to see where
5 things are popping out and where adjustments need to be
6 made in how you approach not just your communication in
7 the organization but the assessment? Do you find those?
8 Or do you only find those through the assessment tools?

9 DR. DILLINGER: We've got a number of things
10 going on. So, for example, and some unfortunate things
11 still happen in NASA just like in every other
12 organization. So, we still have in our institutional
13 safety, we still have people who get hurt, you know,
14 falling, slipping, those kinds of things, twisting their
15 ankle. We continue to look at those metrics. There's
16 whole offices dedicated to looking at those kinds of
17 things.

18 We also have programmatic issues where once in
19 a while something happens. We have not had anything
20 catastrophic happen, but we pay a lot of attention to
21 areas, especially close calls in this last year. We had
22 a close call that I don't know if you want to know about,
23 but --

24 MS. ROBERSON: Please do.

25 DR. DILLINGER: -- it was -- I'll tell you

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1 about it. So, there was a space walk, Luca Parmitano was
2 the astronaut. He was outside of the shuttle. His
3 helmet filled up with water. We expect many things from
4 our astronauts, but we don't expect them to breathe
5 water, and the space suit is not designed for that. It's
6 extremely, extremely dangerous. He was really lucky.

7 He realized he had a problem. They brought him
8 back in. It takes a while just to get somebody, you
9 know, out of the suit. I mean, this is not a small
10 thing. And it turned out there was a technical flaw, of
11 course, and something had malfunctioned.

12 But it also turned out that that malfunction
13 had occurred previously. And they hadn't figured it out.
14 And, so, that was a sit-back moment. And that out-brief
15 was an out-brief that got a lot of people's attention,
16 including Mr. Gerstenmaier, including the administrator,
17 including those kind of people who are like, you know, we
18 talk about this a lot, we consider this to be embedded in
19 our culture, and here we are looking at something that
20 almost did it again.

21 And, so, this is where it's a constant -- we
22 always have to be paying attention to that. Why did that
23 happen? Big look into why that happened, trying to
24 identify it, finding some of the things that we've seen
25 before. And you cannot overcommunicate to a workforce

1 how important it is for them to speak up.

2 MS. ROBERSON: So, thank you very much for
3 sharing that. You know, you described in your framework
4 a lot of things. What I heard is it's never good to have
5 to have a meeting with the boss after an assessment. I
6 got that. But what is your process for really holding --
7 you know, I'm not going to ask you how the centers rack
8 up, but what is the process for holding them accountable
9 for addressing issues that come out of whatever
10 assessment it is?

11 DR. DILLINGER: The process now is more
12 informal. It's more informal than, for example, the
13 inspection process or the audit process. In the audit
14 process and the inspection process, those have -- they
15 have specific findings. Those findings are weighted in
16 terms of their importance. There's time frames that they
17 have to create fixes and respond back and do those kinds
18 of things.

19 Now, often those go hand in hand with safety
20 culture kinds of things, but they're not necessarily the
21 same thing. The program by design is not -- at this
22 point anyhow -- it's not part of the program to build in
23 a response and a followup to that. And this was a
24 philosophical discussion that we had at the beginning
25 when we said how are we going to do this. The belief is

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1 that our leaders are there because they're outstanding,
2 because they're highly qualified, because they're
3 motivated, because they care about their workforces. And
4 we believe that given good information they will work
5 their teams, they will work their experts, and they will
6 come up with the best fixes for where they live.

7 Each one of those 10 center directors is kind
8 of responsible for their own little fiefdom. And, so,
9 they have a number of resources at their disposal and
10 that are responsible for seeing those things through.
11 And we -- our philosophy is that we are going to give
12 them good information and we expect them to do the right
13 things with that. And I have to say, I've been there for
14 five years. What I've seen is that they have.

15 There have been a couple of times informally
16 where at the beginning there was a little bit of kind of,
17 hmm, why are we really doing this and we're very busy
18 and, oh, we have so many surveys, and those kinds of
19 things. But when it got to the point of where if they
20 weren't going to do anything, leadership rolled in on
21 that. And there were discussions that were had and about
22 how that was important and why. And then that was the
23 end of that line of questioning. And then it was more
24 about, okay, how are we going to do this and when can I
25 get the results.

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1 MS. ROBERSON: Okay. Just one last question
2 now. We've talked about the federal workforce. How do
3 you guys -- or how does your framework accommodate
4 ensuring that your expectations in this area get to your
5 contractors?

6 DR. DILLINGER: Yeah. That is probably the
7 hardest area right now. I mean, it's the one that I
8 think about the most in terms of wishing I had the
9 perfect answer for that. You know, part of what's
10 happened in NASA is as the mission has changed and as
11 we're going to commercialization, you know, the whole
12 idea of commercialization is less government, less
13 federal, more industry, and going from an oversight to
14 insight model. You know, that is something that within
15 the agency we are all sort of trying to figure out and
16 what is that really going to look like. What -- how is
17 that really going to happen.

18 I don't have all the answers for that, but it
19 is something that we think about. It's something we care
20 about. There are efforts to go into, for example, Boeing
21 or Lockheed or SpaceX, and to have communication with
22 them through the contracting vehicles, to have safety
23 expectations clearly defined. I mean, those kinds of
24 things are happening, but how it's really going to take
25 shape we're going to see.

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1 MS. ROBERSON: Thank you. We'll be watching.

2 DR. WINOKUR: So, let me follow up on that.
3 You're saying that in these operational safety
4 assessments those are program assessments, right?

5 DR. DILLINGER: Yes.

6 DR. WINOKUR: You would be dealing with a
7 contractor in those, right?

8 DR. DILLINGER: We don't interview the
9 contractors in those. We are actually not able to
10 interview the contractors because of the contract
11 vehicles. And, so, we only can interview the federal
12 employees.

13 DR. WINOKUR: That's very interesting.

14 DR. DILLINGER: Yeah.

15 DR. WINOKUR: One of the things to me about
16 NASA is that it's in many ways similar to DOE in the
17 sense that you have an incredibly complex mission;
18 everything is one of a kind that you do. And the Board
19 paid a lot of attention to NASA and your constructs
20 because we wrote a recommendation, 2004-1, called
21 Oversight of Complex High-Hazard Nuclear Operations, and
22 in so doing we interviewed many NASA people to gain and
23 to benefit from your experience.

24 So, I think you're a model that is not, in my
25 opinion, too dissimilar from the Department of Energy in

1 terms of just incredible challenge that you're trying to
2 undertake in your mission. And your mission, perhaps, is
3 the most dangerous of all because you are putting people
4 on rockets and shooting them into space and things of
5 that nature.

6 Let me ask you a different question here. Do
7 you think there's any validity to the fact that, you
8 know, after 10 or 15 years people just lose sight of what
9 happened and what went wrong after a terrible accident?
10 That there's a periodicity to -- you talked a little bit
11 about the pendulum swing -- but a periodicity where maybe
12 the people who were part of the accident, they've
13 retired, they've gone away, they've been reassigned, so
14 you don't really have people who in their gut really
15 remember what it was like to have a coworker or somebody
16 seriously hurt.

17 DR. DILLINGER: Absolutely. There are a lot of
18 reasons for that, but things -- there can be drift, you
19 know, over time in terms of the prioritization of safety.
20 And that happens. People leave; new people come in; they
21 haven't experienced it. But, you know, one of the --
22 some of the safest places to be, in my experience in the
23 Air Force, were in flying squadrons who'd had a fatal
24 Class A mishap.

25 You know, if you belong to a group of people

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1 where you all care about each other, you're passionate
2 about the mission, and one of you doesn't come home, it
3 makes a huge difference in how people approach things,
4 not just the operators, but the maintainers, the
5 schedulers, the receptionist. I mean, everybody sees
6 things differently when someone's gotten hurt or
7 especially when someone's gotten killed. And in
8 organizations that have experienced that, their awareness
9 is very, very high. And organizations that have never
10 experienced how painful that really is, that person's not
11 there, cleaning out their locker, seeing their widow come
12 over, their children, those kinds of things. It makes a
13 difference.

14 DR. WINOKUR: Yeah. Thank you.

15 I think you've already given us suggestions
16 about oversight, so I wrote those down. I appreciate it
17 very much.

18 Do you have any more questions?

19 MS. ROBERSON: Are you going to ask your
20 question about the virtual organization?

21 DR. WINOKUR: Well, I thought I may have
22 covered parts of it, but let me try it again. I mean,
23 you are -- we talked about a virtual organization.
24 You're an organization that you have the headquarters
25 staff; you have the federal staff; and yet you have a

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1 large contractor workforce, also.

2 DR. DILLINGER: Right.

3 DR. WINOKUR: And we were trying just to get at
4 it before, and I think maybe just reemphasize it again,
5 how do you maintain the safety culture in that contractor
6 workforce so that you're assured the mission is going to
7 be successfully accomplished in a safe manner?

8 DR. DILLINGER: It's something that we look at
9 mostly through procurement, you know, through procurement
10 in contracting. In order -- you know, if our expectation
11 is industry or the contractors are going to take care of
12 this, then we need to write into the contract that that
13 needs to be a requirement. And, so, as we look at people
14 as they vie for those contracts, they need to know that
15 that's an expectation that we're going to look for.

16 DR. WINOKUR: Okay.

17 DR. DILLINGER: But, again, I'm not saying that
18 we've got that totally wrapped up and have figured it out
19 100 percent. I mean, we're working on that. But if
20 we're going to shift the responsibilities into industry,
21 then we need to make sure that industry is covering it.

22 Now, from some of my experiences looking at our
23 contractors, they're very conscious of this, as well. I
24 mean, they don't want to make a mistake. They understand
25 for them this is -- they're about business. They are

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1 business. And they understand that safety as part of
2 their business is important and that they will lose
3 contracts or future work if they don't perform up to the
4 standards that they said they were going to. But we
5 still as the agency need to make sure that they know
6 that's an expectation.

7 DR. WINOKUR: Well, would you have a sense of
8 what the safety culture is in different organizations
9 that support NASA: Lockheed Martin, Boeing, anybody? I
10 mean, would you have a sense of that?

11 DR. DILLINGER: I don't. I've asked about
12 that, and right now, again because of the way the
13 vehicles are set up, we wouldn't go in and do that.

14 DR. WINOKUR: Okay.

15 DR. DILLINGER: It's not part of it. If we had
16 created a contract vehicle where that was part of it,
17 then it could go in and do that. But it's just not part
18 of how it's been set up at this point.

19 DR. WINOKUR: Wow, that surprises me.

20 Do you have any more?

21 MS. ROBERSON: Just one final question. On
22 your assessments, so you're about to complete round two.

23 DR. DILLINGER: Yes.

24 MS. ROBERSON: And I get this in as you
25 described there is an unspoken truth we know that

1 management tends to see things differently than the
2 employees. But this kind of normalized, and I guess the
3 question I'd ask you is what did you learn between -- or
4 what are you learning between round one and round two.
5 Are there areas that were emphasized that are being de-
6 emphasized or vice versa? What are you learning that
7 will help you adjust the approach to be even more
8 effective?

9 DR. DILLINGER: Round two is a little bit
10 different than round one in that the area of concern more
11 than just culture issues is more about change. And more
12 of the concerns are about changes in the mission, changes
13 in the workforce, changes in government, things about
14 stable expectations of the future. Those -- and in some
15 places the workforce is -- would -- is looking for
16 reassurance, I think, about things, sequestration.

17 You know, we heard for -- you know, you can
18 imagine what the comments look like in our surveys right
19 around that time. You know, and so that -- those issues
20 have become much larger than they were in round one.
21 And, so, we've talked a lot with management about
22 messaging to your workforce, again, communication -- you
23 know, communication takes two parts, a sender and a
24 receiver. So, when I say messaging, I don't mean
25 necessarily communication; I mean just messaging. What

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1 are you, the manager and the leader, telling your people.

2 And one of the things we've talked with our
3 leaders about is you need to be informing your people and
4 telling your people as much as you can, as much as you
5 know, about where the program is at, where it's going,
6 where you think it's going to go. Tell them what you can
7 so that they know as much as they can, and then work with
8 them about how you are doing these changes, because if
9 you do it too quickly, you know, there's issues. And if
10 you don't do it when you need to, there's issues there,
11 too. So, it's finding the balance of where that is.

12 MS. ROBERSON: Okay. Thank you very much.

13 DR. WINOKUR: I want to thank you all. I want
14 to thank you all very much, but before, we have a couple
15 of minutes. Are there any other insights that you could
16 share with us or you feel you might share based upon
17 hearing the other presentations? I just want to afford
18 you that opportunity.

19 Well, the presentations were outstanding, so we
20 learned a great deal.

21 MS. ROBERSON: They're going to keep it a
22 secret.

23 DR. HABER: I think that I've been impressed by
24 the commonality in the threads in all presentations. And
25 I hope that the Board has gained that insight of how

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1 different facets and different industries are thinking
2 about safety culture. So, I just jotted down words that
3 I kept hearing that seemed fairly consistent and I think
4 important for you to think about.

5 DR. WINOKUR: Thank you.

6 DR. DILLINGER: I would add on one thing, and
7 I'm struck by this continually by the commonalities. And
8 as you know, there are -- some of us get together fairly
9 regularly at a roundtable, the agency roundtables. And I
10 do think that there may come a time where the Federal
11 Government looks at safety culture at a even higher
12 level, at a 50,000-foot level, in terms of what are we
13 thinking for all of us, for all of the government
14 agencies.

15 There are fundamental tenets that apply no
16 matter what we're really doing, and there probably are
17 some safety culture standards that we could be looking at
18 throughout the Federal Government that then each of the
19 agencies would address in its own way. And I just throw
20 that out there for I'm sure some lively debate in a
21 future time.

22 DR. WINOKUR: Thank you. Once again, I want to
23 thank the three panel members. Thanks so much for your
24 time, insights. We really appreciate it very much.

25 And at this time, per the Board's practice and

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1 as stated in the Federal Register notice, we will welcome
2 comments from interested members of the public, but I'm
3 told we do not have any interested members of the public
4 right now who are going to make a comment. I want to
5 open up the floor to be certain of that. So, is there
6 anybody in the audience who would like to make a comment?

7 (No response.)

8 DR. WINOKUR: So, not seeing anybody who wishes
9 to make a comment, I'm going to turn to the Board members
10 for their closing comments, and then I will end with my
11 comments.

12 So, Ms. Roberson?

13 MS. ROBERSON: No additional comments, Mr.
14 Chairman.

15 DR. WINOKUR: Mr. Sullivan?

16 MR. SULLIVAN: Yes, thank you, Mr. Chairman.
17 So, now I will share my thoughts on this, on this
18 subject. And I wanted to start first of all by thanking
19 all the panelists. I thought those were -- you know,
20 those were well-done presentations. I want to stress
21 that for each of you what you do, my opinion is that you
22 do it very well and in those circumstances where you do
23 it, it's certainly necessary.

24 But my thoughts on the subject are different
25 than what I think is some of the generally expressed

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1 opinions that I'm just assuming were in this room. My
2 thoughts come from my background. I'm a United States
3 Navy submarine officer by training. The Navy is a very
4 diverse organization. When I start mentioning my
5 thoughts on safety culture, I've heard people say, well,
6 yes, but a submarine is a small crew, it's a military
7 organization, things are different.

8 No, the Navy is a very large and diverse
9 organization, many different crews. You have a nuclear
10 aspect and a non-nuclear aspect. The Navy's culture has
11 to run through private shipyards that do design and
12 construction of new submarines and public shipyards that
13 do overhauls of submarines and naval bases that have
14 active-duty personnel doing regular maintenance.

15 We have national laboratories doing research
16 and development. We also have publicly owned naval
17 warfare centers doing research and development. So, it's
18 a very diverse organization, very large, and through it
19 all that has a very strong safety culture, yet we don't
20 have a definition of safety culture. We don't have any
21 action matrices or framework or toolkits.

22 It just -- it comes down in the Navy to
23 leadership. And I heard today about organizational
24 behaviors. It had leadership; and then it had
25 communication and organizational learning and problem

1 identification and resolution. But communication,
2 fostering effective two-way communication, is an
3 essential element of leadership, as is fostering an
4 organizational learning desire, problem identification
5 and resolution.

6 I would add we had discussion on alignment, but
7 alignment is forged by accountability, which is the way a
8 senior leader makes sure subordinate leaders stay in
9 line. It all comes down to leadership. We could have
10 just said leadership and stopped there.

11 The leadership has other elements which are
12 absolutely necessary. It's management; it's managing
13 risk; it's managing people; it's technical competence;
14 it's accountability; it's integrity. But all of these
15 things are hard work. Okay, there is no magic bullet.
16 When you try to figure out whether or -- how we maximize
17 safety on a submarine, well, the easy answer would be
18 just tie the ships up to the pier, but that doesn't get
19 the mission done.

20 Similarly, we could maximize safety at Pantex
21 if we simply stopped managing the stockpile, but that
22 won't work either. There's a lot of factors that have to
23 be considered, yet when somebody has to make a decision
24 about whether or not to move forward with production or
25 stop for safety reasons, there are a number of external

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1 factors, just as there always have been in the submarine
2 force, including whether or not you're going to keep
3 Congress happy or whether or not you're going to keep the
4 Pentagon, which is an executive agency 20 times the size
5 of the Department of Energy, whether you're going to keep
6 them happy.

7 These are difficult decisions. And the answer
8 is not found in a toolkit. It can't be taught in a one-
9 week course. You can't come up with the magic bullet.
10 And I think sometimes when we stress assessments, which
11 are necessary to show -- if you have a good organization,
12 you may need an independent assessment in order to prove
13 to someone external to you that you actually do have a
14 good organization. If you have a bad organization -- a
15 badly run organization, well, then, an external
16 assessment shows you that you have poor leadership. And
17 that's what it shows you, because a good leader should
18 know what the workforce is thinking. And a good leader
19 needs to find its own -- his or her own ways to make sure
20 that they know that.

21 So, I think we sometimes stress assessments too
22 much. It becomes about the assessment. And I'm not
23 frankly interested when I go through around the complex
24 hearing about how somebody's survey turned out. I also
25 know that if you get perfect scores on a survey you

1 probably have other problems. I mean, if you want to
2 keep people happy, don't make them do any work. People
3 who don't want to work, and they come to your
4 organization with other behaviors that have been forged
5 outside of your organization.

6 Sure enough on a submarine people would show up
7 who didn't want to do any work. But if you didn't -- you
8 had to make them work. And then they weren't happy, so
9 they wouldn't give you necessarily great scores on their
10 surveys. It's not about the survey. It's not about the
11 assessment. It's about doing the right thing, and the
12 right thing is hard, and there is no easy answer.

13 Thank you. This concludes my remarks.

14 DR. WINOKUR: Thank you, Mr. Sullivan.

15 And I'll provide my closing comments. I'd like
16 to begin by thanking our witnesses and their
17 organizations for supporting this meeting. And I want to
18 thank all of the members of the public who participated
19 in this meeting. I also want to thank any congressional
20 staffers, elected officials, and other representatives of
21 state and local organizations that participated here
22 today.

23 The expert witnesses that appeared before us
24 today have demonstrated that there is wide recognition
25 that an organization's culture is the key to its ability

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1 to conduct its operations safely and reliably. The
2 commercial nuclear power industry, the Nuclear Regulatory
3 Commission, and the National Aeronautics and Space
4 Administration have all put significant amount of effort
5 and resources into understanding safety culture and
6 improving their operations based on this understanding.

7 We also are aware that other industries
8 involved in conducting high-risk activities have taken
9 similar steps. Establishing and maintaining a good
10 safety culture is not easy. It requires dedication and
11 commitment at all levels of the organization. Creating
12 and maintaining a good safety culture is a long, slow
13 process that never ends.

14 Our goal today has been to learn more about
15 safety culture, how it is assessed, and how it can be
16 improved. Our goal for the next meeting in this series
17 is to discuss with the Department of Energy how these
18 lessons may be applied to improve and sustain the safety
19 of their defense nuclear facilities. I'll look forward
20 to that discussion, and I hope that all of you will join
21 us then.

22 Once again, I want to thank everyone for their
23 participation at this hearing. The record of this
24 proceeding will remain open until June 28th, 2014. I'd
25 like to reiterate that the Board reserves its right to

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1 further schedule and regulate the course of this public
2 meeting and hearing, to recess, reconvene, postpone, or
3 adjourn this public meeting and hearing and to otherwise
4 exercise its authority under the Atomic Energy Act of
5 1954 as amended.

6 This concludes the public meeting and hearing
7 of the Defense Nuclear Facilities Safety Board. We are
8 now adjourned. Thank you all for attending.

9 (Whereupon, the public meeting/hearing was
10 adjourned at 11:54 a.m.)

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1 CERTIFICATE OF REPORTER

2

3 I, LINDA METCALF, CER, the officer before whom
4 the foregoing testimony was taken, do hereby certify that
5 the proceeding was digitally recorded by me and
6 thereafter reduced to typewriting by me or under my
7 direction; that said testimony is a true record of the
8 event; that I am neither counsel for, related to, nor
9 employed by any of the parties to the action in which
10 this proceeding was taken; and, further, that I am not a
11 relative or employee of any of the parties hereto, nor
12 financially or otherwise interested in the outcome of the
13 action.

14

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16 LINDA METCALF, CER

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