

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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27TH ANNUAL REGULATORY INFORMATION CONFERENCE

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REGULATORY AGILITY IN THE NEW MILLENNIUM

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WEDNESDAY

MARCH 11, 2015

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ROCKVILLE, MARYLAND

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The Regulatory Agility in the New Millennium Session of the Regulatory Information Conference met at the Bethesda Marriott Hotel & Conference Center, 5701 Marinelli Road, Rockville, Maryland at 3:30 p.m., Michael Weber, Session Chair, presiding.

SESSION CHAIR:

MICHAEL WEBER, Deputy Executive Director for
Materials, Waste, Research, State, Tribal, and
Compliance Programs

PANELISTS:

ELIZABETH M. BRATTIN, Vice President, Talent &
Culture, Institute of Nuclear Power Operations

KUN-WOO CHO, Senior Advisor, Korea Institute of
Nuclear Safety

PATRICIA GALLALEE, Business Process Improvement
Specialist, Communications and Performance
Management, OEDO/NRC

ANTONI GURGUI, Commissioner, Consejo de Seguridad
Nuclear, Spain

BISMARK TYOBEKA, Chief Executive Officer, National
Nuclear Regulator, South Africa

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

3:31 p.m.

MR. WEBER: Good afternoon, everyone. Welcome to this technical session, W26, Regulatory Agility in the New Millennium. My name is Mike Weber and I'll be chairing the session this afternoon.

I'd like to begin by thanking Cindy Rosales-Cooper, who has been the session coordinator, as well as our esteemed panelists who you will have the opportunity to hear from this afternoon.

I'd note that every year I look forward to the next regulatory information conference, and from the great turnout I can see that you do, too. One of the reasons I look forward to it is we really use your feedback to make continuous improvement, not only in how the RIC is conducted, but also in the topics that are focused on in the regulatory information conference.

I'd note also that this year I think we've met a new milestone in the conference, and that is consistent with the Commission's International Policy Statement. That policy statement, if you're not familiar with it, you can find it on the NRC website, it emphasizes that international work is now integral to the mission of the NRC, and we see that in our

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1 programs for the technical sessions, because what
2 you've seen not only in the previous session, but in
3 other sessions and this session is that you're not just
4 hearing an NRC perspective or a U.S. nuclear industry
5 perspective or an NGO perspective from the United
6 States, but you're also hearing varied perspectives
7 from around the world, because nuclear safety is indeed
8 today a nuclear international enterprise and it's
9 important that we get together on an annual basis, we
10 communicate, we coordinate, we share insights all with
11 the objective of enhancing nuclear safety and security.

12 Regulatory agility is a key feature of a
13 regulator, and we heard it in a number of the
14 presentations by the Chairman and the Commissioners and
15 our executive director for operations yesterday and
16 today. Agility is key for finding that sweet spot for
17 where we need to be as regulators because we need to
18 be prepared to regulate effectively, to license, to
19 inspect, to oversee, to respond. We need to have the
20 people and the skills and the framework in place to do
21 all that, but we also don't want to get carried away
22 and be prepared for every possible contingency because
23 that would have other adverse consequences. It's
24 finding that just right position that we seek in being
25 agile regulators.

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1 This afternoon we're going to hear a
2 variety of perspectives on what is going on in different
3 countries, in different regulatory programs as we
4 collectively strive to achieve regulatory agility in
5 the new millennium.

6 Just some brief reminders for us all.
7 You've been in multiple sessions, so this should come
8 as no surprise. We will use the cards that our
9 volunteers will be bringing back and forth throughout
10 the session, so I would encourage you to, if you've got
11 a question, write it down on the card, hand it in. We'll
12 be using those cards at the end of the session to ask
13 the questions and hear the responses from our
14 panelists. Questions that are not addressed during
15 the session we will be responding to as part of our
16 update of the RIC web site.

17 Your feedback is very important. You're
18 not just given that feedback sheet for something to
19 write on. If you've got questions, write those on the
20 cards, but please give us your feedback because as I
21 emphasized before, it's very important for that
22 information to come to us so we can continue to improve.
23 You may also provide feedback after the conference.
24 You should be getting an email from us which will
25 solicit more general feedback, and, please, because the

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1 session is being audio recorded as well as videocast,
2 if you could silence your portable devices, we would
3 appreciate that so we're not interrupted by an
4 interesting ring tone at some point.

5 Our first presentation will be by
6 Commissioner Antoni Gurgui, and he joins us from our
7 Spanish nuclear regulatory equivalent in Spain. Dr.
8 Gurgui was sworn in as a commissioner of the Spanish
9 Nuclear Safety Council in March 2009, and he is closing
10 in on the end of that initial term. He acts as a
11 representative on the Commission on Safety Standards
12 with me with the International Atomic Energy Agency,
13 so I'm pleased to have that. He is also very active
14 in WENRA and he serves as the vice president in the
15 leading committee for the European stress tests. He
16 was recently appointed as the commissioner in charge
17 in interfacing with us here in the United States at the
18 Nuclear Regulatory Commission.

19 He holds a Ph.D. and a degree in industrial
20 engineering from the Polytechnic University of
21 Barcelona and he also has a masters in engineering from
22 the University of Michigan where he served as a
23 Fulbright fellow, and graduate degrees in hydrology and
24 in public management.

25 So, Dr. Gurgui?

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1 DR. GURGUI: Thanks, Mike.

2 First of all, I would like to thank the NRC
3 for this opportunity to present our views on regulatory
4 agility in the name of the Spanish regulator

5 First of all, allow me to give some numbers
6 about Spain, of course only the nuclear field. We have
7 seven reactors in operation and one which we are not
8 sure whether its in operation or not. We are reviewing
9 the license just now. That makes it about 7.5
10 gigawatts of installed powers. Apart from that, we
11 also have to take care of about 35,000 installations
12 using radioisotopes or ionizing radiation, more than
13 100,000 exposed workers.

14 At the end, you'll see that more or less
15 this represents about one order of magnitude of the size
16 of this overall set in the United States. In fact, the
17 Spanish regulator is about one order of magnitude less
18 than the NRC. We have about one-tenth the work force
19 for 150 people. We have about one-tenth of the budget.
20 Luckily for me, the Commission is not composed by
21 one-tenth of the number of Commissioners in the U.S.

22 Another thing in which it's not one-tenth
23 is the fraction of electricity supplied by nuclear
24 power. It is more or less the same. Twenty percent.
25 About 20 percent of the electricity generated in Spain

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1 is from nuclear origin.

2 Now, coming to the subject of this
3 presentation, our time to process applications is also
4 not one-tenth of that of the NRC. That is, we are not
5 10 times as agile as the NRC. It's more or less the
6 same. This is not so surprising since the Spanish CSN
7 was designed as almost a copy of the NRC. The NRC is
8 celebrating 40th anniversary; we are 35, so we are a
9 little younger than you are.

10 Last year I had the opportunity of making
11 a presentation here also. Exactly one year ago. I
12 stressed the fact that we are a sector in which we have
13 plenty of contradictions. That is, for example, now
14 that we have been talking about Fukushima, if we put
15 a lot of effort on extreme events, it could very well
16 happen that we forget the routine oversight so that at
17 the end safety is not really improved. It's just the
18 contrary. Again, there is plenty of contradictions in
19 our field. In fact, there are so many that I could
20 speak for hours and give dozens of examples, but don't
21 worry, Mike will not allow me to do so. So, I will just
22 have to take some examples.

23 Let's see, referring to regulatory
24 agility, this is how the utilities, how our regulated
25 see us. If you see nothing, that was exactly the

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1 intention of this slide, just to present this mess of
2 regulation. Of course, they say, and in some cases
3 perhaps they are a little right, that we tend to over
4 regulate, that we demand too much regulation and this
5 puts a huge burden into them.

6 But is this really the case? Of course,
7 being a regulator, I'm not neutral on this, so you'll
8 understand that over all my presentation I will
9 defending regulators, but let's take an example about
10 this and let's take one of the biggest strengths of our
11 industry, of the nuclear industry, which is
12 international cooperation.

13 Here you have a list, which is not
14 exhaustive by the way, of the commitments of the Spanish
15 CSN, of the Spanish regulator. Of course, here many
16 are common with the NRC, and you'll see that this is
17 a huge list, so I'll have to choose again, and I'll
18 choose just one, which is WENRA. This is the Western
19 European Nuclear Regulators Association. I'm going to
20 choose WENRA since I wouldn't like that my comments
21 could be interpreted as criticism to it. It's simply
22 a fact giving you some numbers so that you can
23 understand what I mean. I say that I cannot be
24 misinterpreted as a criticism since I am the vice
25 chairman of WENRA.

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1 So, WENRA. Those are the members of
2 WENRA. That's all of European countries having
3 nuclear power plants, plus observers. I'm not go to
4 talk about WENRA, but simply about one of the biggest
5 achievements that WENRA has done over the last years.
6 Those are the reference levels which are a set of
7 reactor safety reference levels which were published
8 for the first time in the year 2006, and the complete
9 set was 284 reactor safety reference levels. They were
10 revised a little later, just two years later, and see
11 that the number of course couldn't be other way
12 increased to 295. But then Fukushima came, and again
13 you can imagine the result. The new reference levels
14 after Fukushima has increased to 346 reference levels.

15 Safety and overregulation are often very
16 good as an excuse for all the problems of the nuclear
17 industry. Is this so? Well, some considerations.
18 First of all, regulatory approval is often at the end
19 of a set of actions, so it's one of the last ones. Are
20 we regulators to blame if, for example, the final design
21 of say instrumentation of control arrives to the
22 regulator two or three years after the supposed date
23 that the plant had to enter service. Clearly there's
24 a huge problem here.

25 Also there is something that was already

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1 stressed in the presentations by the Chairman and the
2 commissioners yesterday, which refers to the quality
3 of the applications, the quality of the documentations
4 submitted by licensees. Here I must say that after six
5 years serving as a commissioner every time I have become
6 engaged in our board meetings, because something came
7 which had been going around the regulator, for in some
8 cases, some years, it's always the case that this
9 documentations had to go back and forth between the
10 licensee and us so that they had to complete or make
11 some clarifications to the documents. So it's quite
12 often that it's not just us who are the main problem.

13 Also, the evolution of the industry has
14 been that incidents happen and accidents do also
15 happen, too. As it couldn't be otherwise, all those
16 incidents always show that something additional has to
17 be made, so adding additional layers to the regulation.
18 Also, some of those accidents show that if we are little
19 bit self-critical we have to redefines of our
20 decisions. It's quite easy to take Fukushima for
21 example and go back to decisions taken 10 years ago by
22 regulators and find that we did make mistakes along the
23 time.

24 As I said, last year I stressed the
25 contradictions. Now, the NRC poses me another

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1 challenge, which is not only contradictions. They say
2 regulatory agility. This is not a contradiction.
3 This is almost an oxymoron.

4 (Laughter.)

5 DR. GURGUI: My feeling is that if we
6 continue business as usual expecting regulatory
7 agility is almost impossible. This is going to go for
8 the worst. On the other hand, however, we could also
9 try to rethink the way we regulate and try to get rid
10 of everything that doesn't bring value to safety and
11 try to see if it's possible to lighten many of the
12 regulation. This is ongoing exercise. This has been
13 done in the NRC. This has been in the CSN. It's being
14 done all the time. I must say, it's a very, very
15 difficult exercise.

16 Now, the previous slide and this one, they
17 are not a choice between two ways going this way or that
18 other way. They intend to be a little bit more like
19 those forecasts of energy consumptions for the future
20 that you see in which you have an optimistic one and
21 a pessimistic other situation. The reality is usually
22 in the middle. This is of course the case also in the
23 case of regulatory agility.

24 What is clear for me, and I think also for
25 the NRC and all of us, is that regulatory agility is

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1 a clear shared objective for most regulators, and
2 surely of course CSN and NRC, but it is extremely
3 difficult. Remember also just yesterday Commissioner
4 Svinicki, her remarks on the importance of details. Of
5 course regulations should not go about details.
6 Safety is the responsibility of licensees. We all know
7 that. But on the other hand, it is extremely important
8 that the oversight by regulators goes down to details,
9 so that it's extremely difficult as I said to make it
10 much more lighter.

11 So I'm going to finish my talk saying that
12 we are fully committed to trying to be more agile and
13 perhaps it not really an oxymoron, but in any case it's
14 extremely demanding. Thank you very much.

15 (Applause.)

16 MR. WEBER: Well done. Thank you.

17 Our next speaker comes to us from down
18 under, only down under in Africa, South Africa in fact.
19 Dr. Bismark Tyobeka serves as the chief executive
20 officer for the National Nuclear Regulator in the
21 country of South Africa. He started his career 14
22 years ago as a reactor physicist at Eskom, the South
23 African electricity utility company.

24 He holds a master's degree and Ph.D. in
25 engineering from Penn State, a master's degree in

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1 applied radiation science and technology from
2 Northwest University in South Africa, a master's degree
3 in management specializing in project management from
4 Colorado Technical University, and a bachelor's degree
5 in physics and chemistry from Northwest University,
6 South Africa.

7 Please?

8 DR. TYOBEKA: Well, thank you very much,
9 Mr. Chairman.

10 Let me first express my appreciation for
11 the invitation to speak on this very important topic,
12 and I was specifically requested to talk on the area
13 of preparedness of nuclear new build in South Africa,
14 and probably this will also demonstrate some level of
15 agility as the National Nuclear Regulator at the bottom
16 tip of the continent.

17 This is my line up for the talk. I'll be
18 looking at what we have done to improve the nuclear
19 safety and regulatory infrastructure and how we are
20 optimizing the regulatory framework in preparation for
21 the nuclear new build, and to also look at how we deal
22 with the issue of regulatory capacity in terms of
23 resources, and in particular human resources.

24 As an introduction, I need to just take you
25 through our nuclear energy policy which was passed in

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1 2008 in South Africa which promotes nuclear as the
2 electricity supply option. This nuclear policy
3 specifically encourages South Africa to promote energy
4 security for South Africa through nuclear means and
5 also to begin to develop skills for nuclear energy.

6 We then moved on in 2010 and gazetted a
7 so-called integrated resource plan, which is a plan for
8 government to look into the mix, an optimum mix of
9 energy sources for the country. This translate into
10 some 20-year electricity plan.

11 In terms of this integrated resource plan
12 of 2010, there was a before and after scenario. If you
13 look at the first one, it puts nuclear at 9.6 gigawatts
14 on the grid, whereas the other -- for example,
15 renewables would get 11.4, but the revised plan even
16 picks the renewables from 30 percent to 40 percent,
17 however, nuclear remains the same at 9.6 gigawatts,
18 which would translate to about 23 percent of the
19 capacity.

20 So in preparation to deploy that 9.6
21 gigawatts we had to engage in a self-assessment process
22 as the regulator and we went through two life cycles,
23 the IAEA self-assessment tool and also the SARIS tool
24 used by the IAEA Lifecycle 2, and completed a number
25 of core modules and thematic modules. We are now

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1 preparing to host the IAEA IRRS mission, the Integrated
2 Regulatory Review Service mission, in December of 2016.

3 Also we're participating in the IAEA
4 regional project to strengthen the national nuclear
5 regulatory infrastructure as part of this
6 self-assessment. From that process, since 2010, we
7 have an action plan from which a number of issues had
8 to be addressed that looked into the review and the
9 update of regulatory standards and processes, among
10 others, regulatory training, establishment of source
11 registers, radiation instrumentation verification and
12 calibration, and the update of quality management
13 systems and establish library facilities, etcetera.

14 After that we also have the integrated
15 nuclear regulatory infrastructure review mission from
16 the IAEA's so-called INIR mission which was carried out
17 on the 8th of February, 2013. This was to review the
18 South African nuclear infrastructure in general, not
19 only the regulator, but all other facets of the nuclear
20 industry in South Africa. As you all know, the 19
21 infrastructure issues as contained in the milestone
22 document of the IAEA was used as a guideline here. A
23 number of strengths were identified by the IAEA INIR
24 mission amongst other regulatory self-assessments that
25 we have been very meticulous with that process.

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1 Environmental impact assessment, the way we carried out
2 how developed our grid is and how we involved our
3 stakeholders were areas of praise from the INIR
4 mission.

5 There were specific recommendations and
6 suggestions identified to strengthen the national
7 nuclear infrastructure for nuclear power, and from that
8 we drew an action plan which was going to be implemented
9 by the certain working groups of the National Nuclear
10 Energy Executive Coordinating Committee, which is a
11 cabinet structure, subcommittee of cabinet in South
12 Africa.

13 The next step that we moved onto was to look
14 at are we well prepared in terms of an accident, an
15 emergency? So we invited the IAEA to conduct the EPREV
16 mission, and this took place in February 2014. It was
17 a full-scope EPREV including all facilities and
18 activities: nuclear material and radioactive sources.
19 And from there also we identified good practices and
20 we had specific recommendations and suggestions and we
21 drew up an action plan which is being implemented.

22 Our nuclear energy policy of 2008 calls for
23 this subcommittee of government, of cabinet that I
24 talked about, NNEECC squared. It's usually called the
25 NEC squared in South Africa. As you can see from the

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1 top you have that, which is basically a group of
2 ministers, the Minister of Energy being one of them.
3 Then underneath that you have the Technical Committee,
4 which is comprised of heads of departments and
5 so-called director generals. Then underneath that you
6 have working groups, and these working groups are
7 divided into a number of thematic areas. The regulator
8 also has its own working group at which it participates.

9 In as far as preparation for new build, to
10 this end we have had quite a number of activities, but
11 in November last year we invited countries, vendor
12 countries that would be in a position to deploy -- well,
13 to offer us different technologies in South Africa. As
14 you can see from the list, China, Korea, France, the
15 Russian Federation and the U.S. The aim here was to
16 inform the procurement strategy and an approach to be
17 adopted for the selection of the preferred technology.

18 How do we optimize the regulatory
19 framework in terms of being agile? Well, we have
20 engaged in a process of looking into the amendment of
21 our governing legislation, in this case the National
22 Nuclear Regulatory Act 47 of 1999. This has not been
23 revised for a long time, but the major important
24 amendments here pertains to issues of nuclear security.
25 This was never covered in the act before. Now we have

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1 incorporated it. We're looking into the improvement
2 of our enforcement regime, the licensing regime for
3 nuclear vessels and military nuclear vessels. We are
4 proposing additional functions to ensure the
5 comprehensiveness and completeness of the functions
6 undertaken and the powers assumed by the regulatory.
7 We are also aligning definitions and terminology in the
8 act with the IAEA glossary.

9 We changed the NNR document hierarchy as
10 part of some of the core challenges that we've gone
11 through in the past. For example, we do not include
12 requirements documents and license document anymore.
13 We've done a gap analysis assuming the implementation
14 of the new document hierarchy, and to date we have
15 developed regulations that did not exist before.

16 As you can see, a list of new regulations,
17 or improved regulations, as we can see from this, which
18 I'm not going to go through. Again, a number of
19 guidance documents that were developed in the past
20 three years, quite a number of them in particular for
21 siting of nuclear facilities because we are preparing
22 for new build and also the construction management of
23 nuclear facilities. Position papers, as you can see
24 from there, a number of them, which I'm not going to
25 read because of time.

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1 Resources. We're currently also probably
2 one order of magnitude of the NRC, about 128 staff
3 members. We are currently -- our only nuclear power
4 plant which is the Koeberg plant, as you can see there,
5 is going through a steam generator replacement. And
6 we have hired specifically for this project. We also
7 have 24 new positions for the new build project and
8 we'll also take some of the steam generator replacement
9 resources and put them in the new build when the project
10 is done. We are also including engaging technical
11 supports organizations to provide specialized
12 resources.

13 One niche area that we want to promote is,
14 one, to establish a Nuclear Radiation Safety Centre of
15 Excellence which provide a pipeline of skills for the
16 regulator. In particular, to conduct research on
17 nuclear safety on new build technologies. We also want
18 it to play a role of technical support for the National
19 Nuclear Regulator because over the years we've been
20 using foreign TSOs and we think this is not bearing us
21 any fruits and therefore we want to have our homegrown
22 skills to be able to drive the new build. This center
23 will also train our inspectors, for example. We'll
24 also be in a position to develop specialized skills that
25 we may need on a project-by-project basis; for example,

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1 a steam generator replacement project that is currently
2 underway.

3 We have identified a host institution in
4 the country in South Africa to be hosted in a
5 university. We have invited a number of international
6 institutions. In particular, my alma mater, Penn
7 State, will be part of that. The University of
8 Michigan has also agreed to be part of that Centre of
9 Excellence, and we're hoping to have our first intake
10 of students in 2016.

11 The Centre of Excellence will be
12 structured, as you can see. It will have its own board,
13 and the director of the center will be an NNR executive.
14 It will be divided into those four areas and it will
15 be carrying out standing on three legs: teaching,
16 research and also providing consultant services for
17 facilities that we do not regulate, in particular for
18 regulators outside the borders of South Africa in the
19 African Continent.

20 On the other hand, we've also ramped up our
21 infrastructure and making sure that our capacity will
22 match the coming challenges. In particular, our
23 environmental surveillance laboratory has just been
24 commissioned with the capacity to analyze gamma, beta,
25 alpha and gross alpha/beta analysis.

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1 We are in the final stages of completing
2 our regulatory emergency response center, which will
3 have the capabilities for online radiation monitoring,
4 audio-visual communication, online data from
5 facilities, and system of analysis codes.

6 To conclude, the success of nuclear
7 programs requires a well-defined, transparent and
8 predictable regulatory environment supported by
9 adequate expertise, facilities and resources. We
10 think to achieve this we have initiated or also been
11 involved in various activities to optimize and improve
12 on our existing regulatory framework, facilities and
13 resources. I'm very confident that we have learned a
14 lot of lessons from the past local and international
15 licensing and construction experiences with nuclear
16 new build, and as an organization we'll be ready to
17 regulate effectively and efficiently any new
18 applications for new build we may receive in the future.
19 Talk about agility. I think that's what we're trying
20 to do. Thank you very much.

21 (Applause.)

22 MR. WEBER: Thank you. Well done.

23 In the last two presentations we've heard
24 regulatory agility being addressed in two different
25 aspects: one, how do you address and position new

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1 requirements in the existing framework? Now we have
2 another demonstration of agility, in terms of preparing
3 for potential new build and also enhancing capacity,
4 while at the same time ensuring proper oversight of
5 operating facilities and users of radioactive
6 material.

7 Our next presenter will be Trish Gallalee.
8 Trish and I had the opportunity to work together on
9 Project Aim for the last half year, and she was an
10 instrumental contributor in that project from the very
11 beginning and she continue to do that today in our
12 Office of the Executive Director for Operations.

13 She has a master's certificate in
14 government contracting from GWU here in Washington, an
15 undergraduate degree from the University of Maryland
16 in human resources and management. Watch out. She's
17 a Lean Six Sigma Black Belt from the Virginia
18 Polytechnic Institute and State University. And
19 outside of the Nuclear Regulatory Commission, she also
20 has served for the last several years as the chair of
21 the Montgomery County Commission for People with
22 Disabilities.

23 So, Trish, take it away.

24 MS. GALLALEE: Thank you, Mike. It's an
25 honor to be here with this distinguished panel and I'm

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1 happy to represent not just the work that we've been
2 doing, but the project team that's been so much talked
3 about at the RIC over the past couple days.

4 Recently the NRC conducted Project Aim
5 2020 that considered internal and external factors to
6 forecast the work load and operating environment in
7 2020. The report contains a set of recommendations
8 focused on a five-year horizon to achieve efficiencies
9 and includes a forecast of the agency's work force
10 needs.

11 Today I'm going to talk about planning for
12 the future, a little bit about Project Aim, and one of
13 the methodologies that we use called Alternative Future
14 Scenario Planning. I'm going to discuss our general
15 approach to the project and some insights that we
16 learned along the way.

17 Traditional planning considers possible
18 variables, drivers and trends, develops a plan based
19 on the most likely future predicted, and the implements
20 that plan based on that singular path to success.
21 Basically, we figure out that one scenario that we think
22 is going to happen and we plan for that future. We know
23 that time moves faster and that we are moving at the
24 rate of cyber-speed. Traditional planning doesn't
25 necessarily give us the ability or agility for the

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1 organization to move forward quickly.

2 This rate of change makes the future even
3 more difficult to predict. For example, if we consider
4 just two of the drivers of technology and
5 communication, we can look at how quickly we can get
6 something done in one day as opposed to what it was like
7 in the past, except our planning and our decision making
8 doesn't always match that rate of cyber speed that we're
9 moving at.

10 The key is to broaden our planning and the
11 way we think about the future by considering the variety
12 of variables to look to the signs that impact planning.
13 By being better prepared we have the ability to respond
14 with agility rather than reactively respond. Failure
15 to read the signs may mean that we don't consider all
16 of the variables and we might be unprepared to deal with
17 whatever might happen.

18 The NRC's Project Aim developed a set of
19 recommendations that broke from traditional planning
20 methodologies to consider a variety of factors that may
21 impact the future. Using the insights we gained from
22 the internal and external analysis, Project Aim
23 developed recommendations for improving current and
24 projected performance, concrete and specific
25 projections of the workload for the agency five years

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1 out, and recommendations for the agency resource levels
2 and work force staffing.

3 We began by considering and analyzing the
4 drivers and trends that may impact the people at the
5 NRC, our planning and the processes, and the slides
6 indicate a high-level list of the drivers and trends
7 we used. Our focus was on increasing efficiency while
8 maintaining our effectiveness in accomplishing our
9 nuclear safety, security and safeguards mission. The
10 NRC mission was out of the scope of the project. We
11 focused on the people, planning and processes that
12 support the mission.

13 After carefully considering all of the
14 drivers and trends, we developed alternative future
15 scenarios. What that means, we looked at a variety of
16 leading private and public sector organizations who
17 used this approach as a key element of planning and
18 enhancing operational excellence, agility and
19 efficiency. Rather than choosing one definitive
20 future scenario and planning for that future, scenario
21 analysis considers multiple futures, not just facts and
22 figures, but a picture of what the future might look
23 like.

24 Therefore we analyzed the external drivers
25 and determined if the plausible, what implications they

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1 may have on the agency, and the impact on internal
2 trends and activities. We developed scenarios that
3 explicitly considered and explored a range of possible
4 future operating conditions, and then we created
5 multiple scenarios. We actually used 4, but you could
6 use as many as 6 or even 10. An even number is better
7 because everyone will pick that one in the middle,
8 right?

9 (Laughter.)

10 MS. GALLALEE: That sweet spot, they
11 think. So if you pick an odd number, it forces them
12 to choose. That represented a broad range of plausible
13 futures. The scenario analysis will help the NRC
14 anticipate and prepare for change rather than
15 reactively respond to the unexpected changes when they
16 occur. Each year we will review our predictions and
17 make adjustments to our planning.

18 We applied alternative futures scenario
19 planning by conducting focus groups. The individuals
20 who attended considered the current state, then they
21 discussed the alternative future scenarios that we
22 presented to them. Through that discussion we
23 identified gaps and obstacles and improvements that
24 might be needed to the agency. We received over 2,000
25 responses, so the project team had its work cut out for

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1 us as we developed the strategies to respond
2 proactively rather than reactive to the conditions that
3 occur. The use of this scenario analysis really
4 enabled the participants to understand and visualize
5 what the future could be like based on the
6 interpretation of the key drivers and trends that most
7 affect the agency rather than just a set of numbers or
8 -- really helped paint the picture.

9 Naturally, we went into our next phases,
10 planning and implementation. We refined the set of
11 strategies working with other groups in leadership
12 throughout the organization trying to have a high
13 degree of transparency with the staff. We agreed upon
14 the most effective and efficient strategies that will
15 address the range of plausible future conditions,
16 developed a plan to integrate the strategies into the
17 budgeting and planning activities, and established a
18 process to monitor drivers and trends to inform
19 adjustments to plans and the future planning. As I
20 said before, the plans will be revised each year, so
21 we're looking forward in the fall to Project Aim 2021.

22 The premise of alternative future scenario
23 planning is that it is better to be imprecisely right
24 in our planning than precisely wrong. Thank you for
25 your time today.

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1 (Applause.)

2 MR. WEBER: Thank you, Trish.

3 I should point out that when we set up this
4 session we did not know that by this time the Commission
5 would have released the project report, so if Trish's
6 presentation has stimulated your interest in what we
7 did and how we did it and what we came up with, I would
8 encourage you to access the report, which you can find
9 through the Agency home page. There was a press
10 release issued on February the 18th of this year, and
11 in that press release there's a quick link so you can
12 access the report for your own reading pleasure.

13 Our next guest I had the opportunity to
14 serve with when I participated in an Integrated
15 Regulatory Review Service in the Republic of Korea in
16 December, where he played the role of the host
17 counterpart, and it was an honor to interact with him
18 in that capacity and to contribute to global safety and
19 security.

20 It is Dr. Kun-Woo Cho. He is the Senior
21 Advisor for Radiation Protection and Safety at the
22 Korea Institute of Nuclear Safety, commonly known as
23 KINS. He's also an adjunct professor at the Department
24 of Nuclear and Quantum Engineering of the Korea
25 Advanced Institute of Science and Technology,

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1 otherwise known as KAIST. In 1981 Dr. Cho graduated
2 from the Department of Nuclear Engineering at Seoul
3 National University. He holds a Ph.D. in nuclear
4 engineering from the University of Cincinnati in Ohio.

5 In addition to his duties at KINS he has
6 been an UNSCEAR representative, the United Nations
7 Scientific Committee on the Effects of Atomic
8 Radiation, of the Republic of Korea since 2013, and he's
9 also a member of the Korean delegation since 2012, and
10 he's a member of the International Commission on
11 Radiological Protection Committee 4 since July of 2013.

12 Dr. Cho?

13 DR. CHO: Thank you, Mr. Chair. Good
14 afternoon. I am very honored and pleased to have this
15 opportunity to talk about Korean perspectives in this
16 important session.

17 Today my talk basically consist of
18 purpose. At the outset I will briefly remind you
19 current status of Korean nuclear power program and
20 continue to introduce the major examples of recent
21 practices and activities proposed in the
22 effectiveness, efficiency and agility of Korean
23 regulatory agencies in the aspects of competence,
24 independence and transparency.

25 In Korea we have 23 operating nuclear power

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1 plants, which supplies about 22 gigawatt electricity.
2 Four units are under construction and two more units
3 under review for construction permit and two more units
4 under planning. At the end of last month, an important
5 decision was finally made for the permit of continued
6 operation of Wolsong Unit 1 until 2022.

7 This table illustrates the future plan for
8 new nuclear power plants in Korea. Most recently the
9 operating license for Shin Hansul Unit 2 was issued in
10 November last year, and the unit is scheduled to begin
11 its commercial operation in July of this year.

12 Allow me now first to explain the
13 background of the establishment of NSSC, Nuclear Safety
14 and Security Commission. This is because the creation
15 of this new governmental agency is one of the major
16 developments that have been achieved for the
17 enhancement of effectiveness and agility of regulatory
18 body in Korea. Before 2011 Ministry of Education,
19 Science and Technology had been in charge of both
20 promotion and safety regulations of nuclear power
21 program. However, since the early 21st Century that
22 had been an increasing demand for more effective
23 separation of promotional and regulatory governmental
24 functions.

25 During the years of 2009 and 2010 three

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1 different bills for the reform of Korean nuclear
2 regulatory system were proposed in the national
3 assembly, and Fukushima accident, which occurred
4 exactly four years ago today, served as a momentum to
5 accelerate the process. Finally, NSSC, nuclear
6 regulatory body, was created in October 2011 as an
7 independent and stand-alone government organization.

8 This slide shows the Korean government
9 structure when NSSC was created in 2011. NSSC was
10 under direct supervision of the president of Korea, and
11 NSSC chairperson was a minister. NSSC was supported
12 by two expert organizations, KINS and KINAC, in the
13 areas of nuclear safety and security, respectively.

14 There was a change in government structure
15 when new government started in early 2013. NSSC was
16 put under supervision of the prime minister, and NSSC
17 chairperson became a vice minister. However, NSSC was
18 able to maintain its roles and functions as an
19 independent and stand-alone government organization of
20 nuclear regulatory body.

21 This slide shows the list of the acts which
22 are under the statutory authority of NSSC and covers
23 all of the relevant areas from nuclear and radiation
24 safety to security and reliability.

25 The mandate of NSSC is well described in

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1 the Article 1 of NSSC Act, and it's to protect the public
2 from any radiation hazard. The responsibilities of
3 NSSC include rulemaking, authorization, inspection and
4 enforcement and expert and import control of nuclear
5 materials.

6 There are nine members in the commission,
7 two of them, chairperson and secretary general or NSSC
8 secretariat, are standing members. The other seven
9 commissioners are non-standing members. Among seven
10 non-standing members, four are recommended by the
11 national assembly, two by ruling political party, and
12 two by opposition parties, and three are recommended
13 by chairperson. They are appointed by the president
14 from among those experienced people in various fields
15 including environment, health and medicine, law and
16 sociology.

17 The commission is supported by the
18 advisory committee which is comprised with 15 members
19 of senior experts in the various areas of nuclear and
20 radiation safety. The NSSC's Secretariat Office is
21 composed of two bureaus and one office and four site
22 offices.

23 Let me now turn to explain the major
24 activities that have been carried out for boosting the
25 effectiveness, efficiency and agility of Korean

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1 regulatory body.

2 First of all, in order to strengthen the
3 regulatory competence the number of staff of NSSC has
4 been continuously increased from 82 in 2011 to 141 in
5 2014. This increased number of staff was largely
6 located to newly established site offices at three
7 different nuclear power plant sites for the purpose of
8 strengthening the ability to cope with the safety
9 issues more swiftly and completely.

10 For strengthening the regulatory
11 independence most importantly law declares the
12 independence as an operating principle of NSSC, in the
13 Article 2 of NSSC Act. According to the Government
14 Organization Act prime minister has general power to
15 suspend or cancel any order of central administrative
16 agencies. However, according to the Article 3 of NSSC
17 Act NSSC is now classified as a special agency exempted
18 from such intervention by prime minister. Therefore,
19 the independence in regulatory decision making,
20 including the issuance and renewal of license, is
21 guaranteed by law.

22 Since November 2012 CFSI issue has been one
23 with major safety issues in Korea and comprehensive and
24 thorough investigations have been carried about by NSSC
25 and KINS. As one of the enforcement measures for the

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1 prevention of the reoccurrence of CFSI the Nuclear
2 Safety Act was revised in May of last year and the scope
3 of inspection by NSSC and KINS was extended to include
4 not only nuclear licensee, but also all companies in
5 the supply chain of nuclear power plants, including
6 designer and manufacture. The nuclear licensee has
7 now the new obligation to make report of any cases of
8 non-conformance and all information on the contracts
9 they made.

10 As additional countermeasures to prevent
11 corruptive actions the following new regulatory
12 systems are being introduced or are already under
13 implementation: Regulatory oversight program of
14 licensees' safety culture is under preparation for its
15 implementation from 2016. Equipment and material
16 tracking system and real-name system is being
17 established to improve responsibility and transparency
18 of licensees' operation. NSSC has now the legal
19 supervision right on equipment qualification
20 institutes and is also going to have the judicial police
21 authorities.

22 Let me now introduce the activities for
23 transparency and communication. Local Committee for
24 Nuclear Safety has been established at every nuclear
25 power plant sites since September 2013. This is to

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1 discuss matters on the safety of the nuclear power
2 plants with the local residents for the purpose of
3 accommodating the opinions and concerns. The members
4 of committee includes representatives of local
5 residents and the experts recommended by local
6 communities. Now the committee is established and
7 under operation actively at six different
8 municipalities.

9 In order to enhance the cooperation among
10 government agencies and to effectively manage the
11 nuclear safety policies and issues and to
12 systematically respond to any cases of emergencies, new
13 mechanism of inter-governmental collaboration
14 Coordination Committee on Nuclear Safety Policy was
15 established in June of last year. The committee
16 consists of the representatives from 22 different
17 government agencies related with nuclear and radiation
18 safety. The committee is chaired by the NSSC
19 chairperson.

20 As post-Fukushima action plan, 50 action
21 items were recommended by a special task team. The
22 implementation of 36 action items out of 50 have been
23 already completed. For example, at each site
24 emergency power generating cars are secured and
25 supplementary emergency diesel generators are

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1 reinforced. The effectiveness for all of the 50 items
2 was reviewed by the end of last year.

3 As in many countries, Fukushima accident
4 provoked tremendous concern about nuclear safety to the
5 public. Comprehensive stress test for all nuclear
6 power plants had been requested. Especially the
7 safety of more than 30 years old reactors, including
8 Wolsong Unit 1, was at most concern. In 2013, when the
9 new Korean government came in, they decided to conduct
10 a stress test to conform the safety of old nuclear power
11 plants. In accordance with this decision, during the
12 year 2013 augmented the stress test of Wolsong Unit 1
13 had been designed and their evaluation has been carried
14 out. Its verification had been followed up in two
15 tracks, one by KINSA experts and another by civil review
16 panels.

17 Considering the self-evaluation result
18 and two verification result of stress tests, final
19 decision for continued operation was made by NSSC at
20 the end of last month of this year and the permit for
21 continued operation until 2022 was granted.

22 Now I will turn to the conclusion of my
23 presentation. Korea has achieved major and important
24 enhancement since 2011 with respect to regulatory
25 independence, competence and transparency to ensure

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1 and strengthen the nuclear safety, and it is worthwhile
2 to note that the IAEA IRRS mission was one of important
3 tools. Thank you very much for your attention.

4 (Applause.)

5 MR. WEBER: Thank you, Dr. Cho.

6 Our last panelist for this afternoon is
7 Lisa Brattin. Lisa serves as the Vice President for
8 Talent and Culture at the Institute for Nuclear Power
9 Operations, otherwise known as INPO, in Atlanta.
10 While INPO is not a regulatory agency, they certainly
11 contribute to ensuring the safety of the operating
12 nuclear fleet here in the United States. And we work
13 closely with INPO as they carry out their roles and
14 responsibilities and we carry out our regulatory
15 responsibilities.

16 At INPO she is responsible for INPO's
17 talent strategy including sizing and shaping of the
18 work force, sourcing of the work force, developing the
19 work force and optimizing the work force. In addition,
20 she's responsible for defining and describing the
21 culture INPO needs and then enacting that culture. So
22 important responsibilities.

23 She holds an executive MBA from Emory
24 University and a BBA from Oglethorpe University. She
25 also participated in the Strategic Human Resource

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1 Planning Program at Michigan Ross School of Business,
2 the Reactor Technology Course for Utility Executives
3 at MIT, and the Delivering Information Services Program
4 at Harvard University.

5 Ms. Brattin?

6 MS. BRATTIN: Thanks, Mike. Yes, it's a
7 great pleasure to spend some time today and chat with
8 you a little bit about what we've been doing at INPO
9 in terms of looking at our culture, how we lead, how
10 we work together.

11 Coincidentally, INPO and the NRC went
12 through a very similar process, so the process Mike and
13 Trish have worked on in Project Aim is very similar to
14 what we've gone through at INPO over the last few years.

15 I might add, somebody said to me you always
16 need to support the chair, so in the spirit of that I
17 want to point out that I grew up in South Africa and
18 I live in the south, so I'm southern South African. I
19 consider that to be a bit of an international flavor,
20 and my friends at work say I'm proficient as a
21 southerner because I can say all y'all.

22 (Laughter.)

23 MS. BRATTIN: We've been experiencing the
24 same challenges as the industry and the NRC in terms
25 of the changes that have occurred in the marketplace

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1 and the nuclear power industry. As we got our new CEO
2 Bob Willard into the company, he looked at our business
3 a little differently and embarked in 2013 on a complete
4 review of our strategic approach. We developed a case
5 for change that was based on industry performance.

6 INPO has been in place a little over 30
7 years and there's been remarkable improvement in the
8 industry driven by the hard work at the utilities, but
9 we really weren't satisfied with where we were. We
10 were doing a lot of major operations like our plant
11 evaluations, but perhaps not getting the complete
12 results that we wanted.

13 As a result of that, we developed a
14 strategic plan that is in three pieces. The first is
15 our strategy for the U.S. industry and our member
16 utilities. The second is our international strategy
17 including working with WANO. The third is the
18 corporate strategy, and that's really where I work.

19 As we looked at this, INPO is a group of
20 people. We don't make power and we don't sell widgets.
21 All of our resources are imbedded in our human capital,
22 in our people. As we looked at the future, we realized
23 we needed to be more effective and efficient and it
24 required us to have a more flexible and agile work
25 force. I bet if I took a poll in this room and said

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1 what are descriptors that come to mind when you think
2 of INPO, flexible and agile are not two that would come
3 to mind. We tend to try to be the stable influence in
4 the industry, and that's an important role that we play,
5 but our work force is going to have to be more nimble,
6 because as we face economic pressures, we're going to
7 have to use our folks more flexibly. So we have to
8 think differently about how we approach our company.

9 Just a primer on organizational culture.
10 This is what we use. We used Edgar Shein's work on
11 organizational culture as the basis and framework for
12 how we thought about culture. If you want to think
13 about culture, it's really an organization's
14 personality. It's about those shared basic
15 assumptions that are learned by the group over time and
16 replicated as successful positive outcomes are
17 derived.

18 You see culture when you look at an
19 organization through things like artifacts. What do
20 you see around? What are the posters on the wall?
21 What do people have in their offices? How do people
22 talk about performance? How do people talk about the
23 beliefs in the organization? There's one thing to have
24 the values posted on the wall, but if what's rewarded
25 and valued is not in conjunction and in agreement with

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1 that, that creates some dissonance that's challenging
2 within the organization.

3 Then what are those unconscious taken for
4 granted beliefs that are important? It's really
5 important to understand those. Someone said in a
6 presentation earlier changing culture is hard, and it
7 is, because each one of us brings a perspective to the
8 company that is influenced by our own values, but needs
9 to be in conjunction with the values of the
10 organization. Leadership can have a big impact on
11 this, and in fact sets the framework. If you think
12 about your organizations, you'll think about how your
13 culture has evolved over time as your leadership teams
14 have evolved.

15 We wanted to, as we looked at our corporate
16 strategy, really take a purposeful systematic look at
17 our culture and link it to our strategy. So that's the
18 approach that we used.

19 The other reason this is important is
20 because of the value of employee engagement. Gallup
21 has done a poll. They published their most recent
22 issue in 2013. They did one prior study. They've done
23 employee engagement surveys with 25 million American
24 workers. They're not in the utility industry only.
25 This is across all industries. Coincidentally,

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1 they've also done a worldwide survey, but I focused on
2 the U.S. one.

3 What they realized and what they found with
4 their research is that there is a significant business
5 benefit to having engaged employees. They defined
6 engaged employees as those that are involved in and very
7 enthusiastic and committed to their work. What you'll
8 see is that those engaged employees will give you that
9 extra -- they'll go the extra mile for you.

10 What's sad is that the engagement survey
11 results for the U.S. businesses is pretty dismal. Only
12 30 percent of U.S. workers view themselves as engaged.
13 These are workers that work with passion in your
14 business, feel a profound connection to the company.
15 Fifty percent, a full half, of our work force is not
16 engaged. These are folks that are essentially checked
17 out. They come in, they'll do their job, but they're
18 giving you no extra effort, and 20 percent are actively
19 disengaged and often working against what you're trying
20 to do in your business. If you think about our budget
21 and apply these kinds of percentages, if we don't have
22 highly-engaged employees, we're not serving the
23 industry well.

24 If your employees are engaged, they drive
25 innovation and improvement, and that's something that

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1 we need. They build new products and services and they
2 generate new ideas. The research shows that the top
3 25 percent of teams in terms of engagement versus the
4 bottom 25 have 50 percent fewer accidents and 41 percent
5 fewer quality defects. In our industry the accident
6 rate is worth paying attention to.

7 The Gallup Q12, this is the questionnaire
8 on which they base their employee engagement. If you
9 look at it, you'll see there's not a question about how
10 much we pay our employees. There's not a question
11 about what their health benefits are. Those are
12 different. What really engages people is how you treat
13 them as people. Do you respect them? Do you develop
14 them? Do you care about them? Do you show them what
15 their development path is? Those are the things that
16 engaged employees are interested in and want to see
17 within an organization. I would argue that leadership
18 can in fact address all of these 12 questions. For us,
19 this was the approach that we took.

20 When you look at utilities that we work
21 with, those that are resilient have these factors in
22 common: They have a clear vision and strategy. They
23 foster a learning organization. Their leaders are
24 skilled in coaching, in accountability, in working with
25 their teams. They use risk-informed decision making

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1 to balance their business decisions with the needs of
2 the company and they have an aligned and engaged work
3 force.

4 As I was embarking on this culture work at
5 INPO, I could gain no traction until I came up with a
6 wiring diagram.

7 (Laughter.)

8 That's what this is. We could talk about
9 engaged employees, but until we came up with a diagram,
10 we weren't making progress.

11 This is our approach. There's external
12 factors that have an impact on this; and Trish talked
13 about some of them in her presentation, in terms of the
14 economics, demographic shift, technology shifts, and
15 those external factors have an influence on the
16 company, which is your first circle. What really helps
17 you with that is your organizational values, the
18 behaviors and principles with which you operate your
19 business.

20 As we were going through our strategic
21 redesign, we took a look at our principles and we
22 aligned them with our strategy and we aligned them with
23 the strategy in a way to ensure that we get to our
24 ten-year outcomes. We took a look at our
25 organizational values and we actually made some

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1 adjustments to them, which was unsettling to our work
2 force, but it was important to us as we looked at what
3 we need to place emphasis on.

4 If you think about human labor coming into
5 the business, you then use technology and processes to
6 convert that labor into outcomes. We also wanted to
7 take a look at our processes and our technologies to
8 make sure that they were aligned with the strategy that
9 we wanted and to ensure that our investments of funding
10 into technology elements were really supporting the
11 most important business imperatives to help us ensure
12 we got the right outcome. Then finally we aligned our
13 structure with our strategy, and that has been hugely
14 beneficial for us because we've really become laser
15 focused in terms of the outcomes that we want to
16 achieve.

17 What we've done is we've used our values,
18 the principles and the desired behaviors that are
19 linked to the strategy. We're using our management
20 model, which is how we run our company over time, to
21 get us to be our desired organization and effective.
22 That's the model that we're using to try to help people
23 understand why this is important and how we're going
24 about this.

25 Our way forward is this: INPO employees are

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1 very focused on our mission of safety and reliability.
2 It really doesn't matter if you come to us from a utility
3 or Home Depot. Very, very quickly you become focused
4 on our mission and the pursuit of excellence. That's
5 a strong unifying factor for us that we need to honor
6 as we move forward in changing how we view our culture.

7 We've refined our core values and
8 associated behaviors. For instance, in our original
9 set of core values we didn't highlight people. As I
10 pointed out earlier, the only thing we have at our
11 company that is our resource is our people, and in order
12 to be successful we need a nimble and agile work force.
13 It seemed like a gap not to have a value around our
14 people. Now we have one about inspiring people.
15 We've talked to the workforce about why that's
16 important.

17 We've developed leadership effectiveness
18 attributes that are aligned to the ones that we've
19 developed for the industry, but we're using these for
20 leader selection, leader development and leader
21 performance. It's a consistent message. We're
22 evaluating people against a consistent set of
23 leadership attributes, developing them in the same way.
24 We're trying to ensure that our teams are more effective
25 because we are very much a matrixed organization, so

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1 we've come up with team effectiveness attributes that
2 again align with the ones that we use with the industry
3 but are focused on our INPO teams.

4 We had drifted in terms of our procedures.
5 They weren't necessarily aligned with where we were
6 today in the business, and so we've really focused on
7 that. I'm talking about not only internal procedures,
8 but if you think about how we run our evaluations, our
9 training accreditation processes, we're re-looking at
10 that and saying is the way that we're doing it the best
11 way to deliver value for the industry? We're
12 constantly reinforcing this with communication.

13 One of the things I learned is I thought
14 we were over-communicating and then I realized we
15 weren't communicating enough. It's just relentless
16 and consistent messaging around what we're trying to
17 do.

18 We're purposefully focusing on our culture
19 because we believe it can improve our organizational
20 effectiveness. We know that leaders directly impact
21 this, so we're focusing on our leaders and our leader
22 behaviors. Employee engagement is important because
23 it not only impacts safety, but it impacts the bottom
24 line. For us to be successful in the long run we really
25 need to be successful in this area of aligning our

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1 organizational culture, our leadership and teamwork
2 attributes. Thank you very much.

3 (Applause.)

4 MR. WEBER: Thank you.

5 Congratulations. You're among those 30
6 percent engaged employees.

7 MS. BRATTIN: Yes.

8 MR. WEBER: If you're sitting here late in
9 the day in a full day of the RIC and the lights are
10 getting dim, you are engaged. I think that also
11 reflects very positively on the NRC staff. As you
12 heard from the Commissioners, one of the most
13 impressive aspects of working at the Nuclear Regulatory
14 Commission is the highly-engaged, committed, dedicated
15 employees that make this place tick. Just like at
16 INPO. Just like all the regulatory agencies that you
17 heard from this afternoon.

18 I'm going to start with a general question
19 that's really directed to all because you might hear
20 different perspectives on this question, and that is,
21 what advice would you give to newcomer countries so that
22 they can establish agile regulators from the very
23 beginning? Who wants to start with that one?
24 Commissioner?

25 DR. GURGUI: I guess you want a short

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1 answer, don't you?

2 MR. WEBER: Well, I wouldn't say --

3 (Simultaneous speaking.)

4 DR. GURGUI: -- perhaps. First, assemble
5 a sufficient group of skilled people experienced in the
6 fields that you are going to need later.

7 Second, do not reinvent the wheel. Choose
8 the existing regulator, that model of regulator that
9 you think is best and build an equivalent organization.
10 There is plenty of documentation for that. IAEA
11 fundamentals requirements, WENRA reference levels and
12 so on. Use that. You have it easily available.

13 The third one, which is very important not
14 only for newcomers in our field, but for any new project
15 I would say, is please, please, please do not forget
16 that regulation has to be imbedded in new projects since
17 the start. That is in project, in the design, in the
18 building process, because otherwise, if they are
19 treated as different things: engineering, building,
20 construction and regulation on the other side, you are
21 surely going to get cost overruns, delays and so on.
22 This would be the answer, my answer.

23 MR. WEBER: Okay. Thanks. Anybody
24 else? Trish?

25 MS. GALLALEE: Yes. I think when it comes

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1 to the work force and considering the competencies of
2 the work force and really ensuring and instilling in
3 the people, it's not only about moving up, but it's also
4 about growing and expanding our skills, so really try
5 and create a culture of learning so that your
6 individuals build in their own agility to multitask and
7 to do a wide variety of activities within your
8 organization.

9 MR. WEBER: Any answers over here?

10 DR. TYOBEKA: Yes. Just to add on what
11 the colleagues have said, I think it's important to also
12 advise the newcomers that life is too short to reinvent
13 the wheel, so take advantage of benchmarking yourself
14 against the best in the world. Take advantage of the
15 lessons from the people that have done it before and
16 don't reinvent the wheel.

17 I think one other thing that we seem to
18 forget as regulators is that we expect of operators to
19 communicate to the public, but we don't do it as
20 effective as we should be doing it as a regulator. As
21 a newcomer country regulator I would say from the
22 beginning establish that relationship between
23 yourselves and the public so that that transparency,
24 that ease of communication between you as the authority
25 in nuclear safety and the public can be used to build

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1 the confidence in the public that you are there to
2 protect them, not to be part of the operations. Thank
3 you.

4 MR. WEBER: Kun-Woo?

5 DR. CHO: Well, I think I just can
6 complement the speaks by my previous speakers, that as
7 you can see in my presentation, right now my country
8 is focusing on mostly the participation and involvement
9 of the public in the implementation of regulatory
10 activities. This change was made by after Fukushima
11 accident, so I think that all newcomers should consider
12 the principle of transparencies in your regulatory
13 activities should be the top priorities among your
14 regulatory policies.

15 MR. WEBER: Thanks. And Lisa?

16 MS. BRATTIN: I agree with the previous
17 panelists. The only thing I would perhaps add is a
18 laser focus on the mission. I think early on it's easy
19 to drift and I would try to keep really laser focused
20 on health and safety of the public.

21 MR. WEBER: Thank you. One other comment
22 I would make along the lines of don't reinvent the wheel
23 is you're starting, start with the IAEA safety
24 standards and then work with peer regulators to learn
25 from how have they been applied in their own countries,

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1 because you'll get a diverse set of approaches and then
2 you'll be able to pick from among those which approach
3 makes the best sense for your country for what you're
4 trying to achieve consistent with the mission and doing
5 it in a transparent and an open way.

6 Commissioner, I have question here on what
7 were the challenges faced in setting the EU reactor
8 safety levels, and have the safety reference levels led
9 to uniformity in the safety performance for reactors
10 in the WENRA countries?

11 DR. GURGUI: Well, the first safety
12 reference standards were placed in the year 2006. I
13 was not there yet. In any case, it was a huge
14 achievement since, in Europe, as most of you know, we
15 have a very big variety of reactor designs, reactor
16 types, regulator types. I wouldn't say perhaps a mess.
17 That would be excessive, but really a very, very diverse
18 population of nuclear problems. So, setting a common
19 group.

20 By the way, I would like to stress that
21 WENRA is essentially a club. It's a voluntary club;
22 that is, the commitments we make there nobody -- we are
23 not obliged by anyone, by any legislation to do so.
24 This cooperation which led to agreeing on common
25 grounds regarding the regulation of safety, I think it

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1 was a very big achievement. In the sense to end, I
2 would recommend you to have a look at the WENRA webpage,
3 and there you'll find all the documentation that
4 explains the process, the levels, and so on.

5 MR. WEBER: Thank you. Some of the
6 questions we've received from you are more reflective
7 of the individual presentations you heard, because you
8 did hear a range of different regulatory programs
9 presented. They're not quite in sync with the agility
10 focus, but they are certainly responsive to the
11 presentations.

12 Our next question will be to Dr. Tyobeka.
13 Can you clarify if your regulatory organization has
14 both a promotional and a regulatory or safety focus on
15 nuclear energy? If you can, do you see any problems
16 with doing both of those? So it's promotion and
17 safety.

18 DR. TYOBEKA: Well, I'm surprised that the
19 question came because I don't know if along the lines
20 of my presentation I gave the impression that we do
21 both, but certainly that is not true. We have a history
22 in the country where our regulatory framework evolved
23 from being combined, which is the same as many other
24 regulator bodies. It started as embedded within the
25 promotional activities, but with time evolved and

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1 separated from promotional activities. We have a
2 legislation that governs strictly nuclear safety
3 regulatory practices, and there's also a specific
4 legislation that looks at promotional activities. The
5 two are separate.

6 Perhaps one area where I must confess that
7 we may be giving that impression is because we report
8 directly to the same ministry as the promotional
9 operators such as our national laboratory under the
10 same Minister of Energy. As part of the review process
11 of our legislation, especially towards new build and
12 as part of the input that we get from the lessons learned
13 from Fukushima, there is strong consideration from
14 government to completely remove, in line with what my
15 Korean colleague has just demonstrated, to completely
16 remove the national nuclear regulator from reporting
17 to any ministry and perhaps look at making it a
18 stand-alone subculture, what our constitution called
19 Chapter 9 institutions, those institutions that report
20 directly to the parliament. That is the preferred
21 route that we also are recommending to the government,
22 but that's perhaps something that can happen sometime
23 in the future. It's a strong consideration.

24 MR. WEBER: Okay. Thank you for that
25 important clarification.

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1 Trish, here's a question for you, and a
2 succinct response would be good.

3 MS. GALLALEE: Okay.

4 MR. WEBER: Because it could be a, what did
5 the Commissioner call it, a Ph.D. dissertation this
6 morning.

7 MS. GALLALEE: Yes.

8 MR. WEBER: Regarding future scenario
9 planning methodologies, how do you ensure a
10 sufficiently broad range of perspectives and adequate
11 "imagination," in quotes, for possible futures? And
12 who were the participants at various stages in your
13 process: scenario development, focus groups, etcetera?

14 MS. GALLALEE: Well, that is a major
15 challenge and consideration. One of the things that
16 we did was really look at what are those major drivers
17 within our organization and focused primarily on those
18 things that would most affect our people, our planning
19 and our processes and the biggest impact of our work
20 force, because that was really a big focus. I think
21 it's important when you're embarking is to have that
22 sort of what is the end in mind that you're looking at?

23 What was the second part?

24 MR. WEBER: Who were the participants in
25 the various stages of the process?

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1 MS. GALLALEE: We involved and engaged
2 with our senior leadership team as well as our staff.
3 We had 23 focus groups where we had participants
4 anywhere from 12 to 25 in each session. We engaged
5 them, as well as a survey that we had, and basically
6 talking to anybody who would listen.

7 (Laughter.)

8 MR. WEBER: I would only add we also
9 reached out to external parties: the industry,
10 non-governmental organizations, other federal
11 agencies, societies, international. It was a pretty
12 broad sweep.

13 MS. GALLALEE: And hundreds of articles.
14 Thank you, Mike.

15 MR. WEBER: Yes.

16 Dr. Cho, here's a question for you. Do you
17 believe radiation dose response regulation should be
18 revised? And if so, what would be an acceptable agile
19 strategy to do that? Radiation protection
20 regulations.

21 DR. CHO: In Korea?

22 MR. WEBER: In Korea or globally.

23 DR. CHO: Ah, globally? Well, I mean, to
24 my country, as I told you in my presentation, we had
25 received an IAEA IRRS mission December of last year.

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1 One the major findings, they recommended us to revise
2 our radiation protection regulations because they
3 believe that there are certain lack of the regulations
4 in the areas of justification and optimization. I
5 think perhaps we'll go into the process of the revision
6 of the Korean radiation process and regulations,
7 especially in the aspects of, the manifestations of
8 justification and optimization principles in our
9 regulations. Well, I think I can stop there.

10 Also, I mean, in terms of the ICRP, because
11 I am a member of the full committee of ICRP, and also
12 I am as a member of Committee 4, I am now chairing a
13 task group under Committee 4, Task Group 94. Task
14 Group 94 is for the ethical foundations of the systems,
15 because Committee 4 established this committee because
16 of the Fukushima accident, because the current ICRP
17 publications, radiation protection recommendations,
18 we believe it is not so clear for the communication of
19 the recommendations with the public.

20 The purpose of this task group is to
21 clarify and be explicit about what are the ethical
22 foundations, values which are imbedded underlying the
23 radiation protection systems. With that, perhaps, we
24 hope that it should be helpful to communicate the
25 radiation protection recommendations principles with

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1 the public. That way we try to protect the public from
2 the possible harmful radiation effects. I guess that
3 this publication may be published sometime, I mean, a
4 few years later. I think that's what I can say at this
5 point.

6 MR. WEBER: Okay. Thank you very much.

7 And Ms. Brattin, kind of a two-fer here.
8 One question is how would you define the difference
9 between engagement, motivation and perspective? Then
10 how do you address the situation where an employee's
11 idea or recommendation is not incorporated? How do you
12 keep them from disengaging?

13 MS. BRATTIN: In terms of engagement, I
14 think in many cases engagement are things that we can
15 have an impact on as leaders. I think motivation to
16 some degree is very personal and what drives you is
17 different in terms of motivation than it is on
18 engagement.

19 What was the third option there, Mike?

20 MR. WEBER: Perspective.

21 MS. BRATTIN: Perspective? In terms of
22 somebody coming into a business with a perspective
23 different perhaps than where the corporation is going
24 and where the team is going, I think there's value in
25 discussing that with the employee to try to understand

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1 it, but ultimately the perspective has to be aligned
2 with what the business is trying to do. Running a
3 business is not a committee effort, right? There are
4 some things that, hey, this is where we're headed and
5 we need you to understand why and we need you to help
6 us understand if we have any fatal flaws. Ultimately,
7 once we've massaged all that, that's where we're going.

8 In terms of addressing employee
9 perspectives, yes, I think the communication and
10 engagement is important there. I think for most of us
11 what we want to do is we want to be heard. We want our
12 opinion to be validated. We want to understand that
13 it has been, and then have some idea of why the decision
14 that was made was made. We may not agree, but I think
15 as long as we understand that and we feel validated,
16 most of us can sort of move forward. That is true for
17 everything except perhaps ethical and integrity
18 issues. I think it's really we're people and engaging
19 one on one, eye to eye and hearing each other out takes
20 a long way to getting us there.

21 MR. WEBER: Thank you. I had a question
22 that I was given, and it was you mentioned the benefit
23 of engagement with peer regulators to avoid reinventing
24 the wheel. How did Project Aim take advantage of
25 lessons learned from other international regulators?

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1 Stated succinctly, we did reach out to
2 multilateral organizations, the International Atomic
3 Energy Agency, the Nuclear Energy Agency, and one of
4 the benefits that I have of serving with peers on the
5 International Commission on Safety Standards is to
6 engage them on a semiannual basis when we get together.
7 When we get together and we discuss issues, we're
8 talking not just about the safety standards that are
9 under review, but we're also talking about what's
10 driving those safety standards and what experiences
11 we've had individually in one country after another,
12 but then comparing notes. That's a real benefit of
13 working with peers around the globe to strengthen
14 nuclear safety and security.

15 With that, I would ask you to say thank you
16 to our distinguished panelists with a round of
17 applause.

18 (Applause.)

19 MR. WEBER: Thank you very much. This
20 ends the end of Session W26. We'll see you bright and
21 early tomorrow morning. Thank you.

22 (Whereupon, the above-entitled matter
23 went off the record at 4:59 p.m.)

24

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