

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

+ + + + +

34TH REGULATORY INFORMATION CONFERENCE (RIC)

+ + + + +

TECHNICAL SESSION - W15

REGIONAL SESSION-REACTOR INSPECTION PROGRAM:

LEAVING TOMORROW BEHIND

+ + + + +

WEDNESDAY,

MARCH 9, 2022

+ + + + +

The Technical Session met via Video-
Teleconference, at 1:00 p.m. EST, Jeff Baran,
Commissioner, Nuclear Regulatory Commission,
presiding.

PRESENT:

THE HONORABLE JEFF BARAN, Commissioner, NRC

KELVIN HENDERSON, Senior Vice President & Chief

Nuclear Officer, Duke Energy

RAYMOND LORSON, Deputy Regional Administrator,

RI/NRC

MARIA LACAL, Executive Vice President and Chief

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

Nuclear Officer, Arizona Public Service - Palo
Verde Nuclear Generating Station

LAURA DUDES, Regional Administrator, RII/NRC

EDWIN LYMAN, Director of Nuclear Power Safety, Union
of Concerned Scientists

JACK GIESSNER, Regional Administrator, RIII/NRC

JEFF SEMANCIK, Director, Radiation Division,
Connecticut Department of Energy and
Environmental Protection

SCOTT MORRIS, Regional Administrator, RIV/NRC

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

P R O C E E D I N G S

1:01 p.m.

COMMISSIONER BARAN: Good afternoon, everyone, and welcome to the regional session. I'm Commissioner Jeff Baran and I'll be moderating today's session. One of the best things about this session is there are no opening statements or long presentations.

It will be 100 percent Q&A with the panel so we can focus on the issues that you're most interested in. As you think of questions, please submit them through the RIC platform. We'll work hard to get through as many questions and topics as we can.

To get things started we have some prepared questions but we're counting on the audience to come up with questions to sustain a great discussion.

Because it's a big panel, in most cases I'll ask one of the regional administrators to respond and invite the other panelists to weigh in if they have thoughts they want to share on the topic.

But every panelist should always feel free to jump in with a different perspective or a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

point they want to make.

Let me start by introducing our terrific panel, first our four NRC regional panelists from our Region 1 Office outside Philadelphia we have Ray Larson, from Region 2 in Atlanta we have Laura Dudes, Jack Giessner is here from our Region 3 Office outside of Chicago, and Scott Morris is our Region 4 administrator from Arlington, Texas.

We're also lucky to have executives from two of our licensees join us, Duke's Chief Nuclear Officer, Kelvin Henderson, and Maria Lacal, Executive Vice President and Chief Nuclear Officer for the Arizona Public Service Company.

For the first time, one of our state partners is joining us on the panel, Jeff Semancik, Director of the Radiation Division of the Connecticut Department of Energy and Environmental Protection.

Rounding out the panel, we have Ed Lyman, Director of Nuclear Power Safety at the Union of Concerned Scientists. I know we're all looking forward to hearing their views on a range of topics so let's get started with the first question.

During the 2019 health emergency, summary actor inspections need to be performed remotely.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

What lessons has the NRC learned about the effectiveness of remote inspections compared to in-person inspections?

What did we learn about technologies that could be used to supplement or enhance in-person inspections, and what do the non-NRC panelists think about the relative narrative remote and in-person inspection?

Scott, do you want to start off on this one?

MR. MORRIS: Yes, sure I'm happy to. Can you hear me okay?

COMMISSIONER BARAN: Yes.

MR. MORRIS: This is a really interesting and important question.

Obviously, because of the public health emergency we out of necessity had to do a lot more remote inspections in order to complete the nominal or at least the minimum set of samples for our baseline inspection program at all operating power reactors. And I think, well, I don't think, we were successful, it was challenging but we learned a lot and we're still learning.

We talk about this all the time, it's an

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

important issue that I know that NRR and the other regions are actively focused on in looking for ways to enhance our guidance.

But I'll say this, I think we were successful in large measure over the last couple years doing remote inspections because we started with a set of highly qualified inspectors to begin with.

These are folks who are seasoned inspectors who have been in the field and done most of these inspection procedures I'll call live and in person. And so it was a little bit easier of a transition for them to go remote in the first place because they knew the right questions to ask and who to talk to.

That becomes less impactful the more and more people that we lose through attrition and the more new people we hire. So, that elevates the importance of in-person inspections.

But I will say I personally believe and I'm sure others will weigh in here, there is a role for some remote inspections going forward. It's not the end all be all. Yes, we can get some efficiencies out of doing it.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

For example, we can do document reviews, corrective action program looks, we can look at self-assessments, we can conduct some interviews.

And as a consequence, the time that we do spend on site I think can be more sharply focused on things that really do require in-person inspection.

So, again, I think there's a role for remote inspection. I think in part it can also help supplement team inspections. We do a number of team inspections and we've had cases where we've got one or two folks who are back in the office so to speak and some guys in the field, and there's still mutual support that happens that way.

That's something we've done for years by the way. It also is unfortunately not the end all be all. I think most of us would agree that on-site inspection, in-person inspection is more appropriate, more effective for a lot of reasons.

I think about remote inspections, it's almost like looking through a straw. You can only see what's on the other end of the screen in some cases. You don't necessarily get all the other contextual things that you would get by walking around a plant listening, hearing, smelling, all

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

those other sensory inputs.

We add a lot of value I think as an agency and most licensees that I speak to would agree, just are walking around with our inspectors, leaders and managers during site visits, seeing, touching, doing is helpful because we see things that licensees don't necessarily see, many of which are not particularly significant.

But they're observations that we make and we can share those with licensees in real time and bring them to their awareness.

We wouldn't see through remote inspection and I think we add a lot of value as an agency by sharing what I'll call those low-level observations with licensees that never find their way into inspection reports, never find their way into assessment documents.

But a lot has been learned, we're still learning, there is a role for remote inspection but at the end of the day, I think we have much more effective and meaningful engagements and learnings through onsite inspection.

And if we have enough time, I can share some examples to help illustrate that, but I'll stop

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

there and let others weigh in.

COMMISSIONER BARAN: Any other panelists want to weigh in on this issue of remote inspections versus in-person inspections and the relative merits?

MS. LACAL: Sure, Commissioner, I'll weigh in if that's okay.

I think we've proven that we can continue to have very effective inspections remotely. I know that we immediately provided our resident inspectors with technology, computers.

They've had access to anything and everything that they wanted access to, whether it was parameters and being able to monitor our plants remotely to being able to participate in all kinds of meetings.

I think it's also really helped us focus on our resources, less time in airport and on airplanes and a lot more time doing the inspection activities.

We've also really homed in on our communications and making sure that we kept our residents in the region involved and engaged, communicated at all times. And I think we've learned a lot through these past two years.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

I know at APS we're transitioning to a hybrid workforce. We're not necessarily all going to come back to the site but it will be more of a hybrid where it will be on site and some folks where it makes sense to be at home.

I think the NRC can do the same when it comes to inspections.

We'll continue to review documents remotely, use Teams meetings, et cetera, and then we've got our resident inspectors so if there's anything that needs to be observed or any sort of activity that needs to happen on site, the resident inspectors are here and can certainly do that for an inspection team.

I'll say we had a great example of that during this timeframe. We had a RAD material control inspection where there was a lot of question around a particular aspect about our storage facility.

And so our senior resident walked down, took photos, and provided that information directly to the inspection team and we were able to resolve the inspection team's questions without necessarily having them come to the site.

So, I think this hybrid approach, we've

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

learned a lot and we can continue to think about that going forward beyond hybrid and really try to manage our costs and our precious resources.

COMMISSIONER BARAN: Thanks, Maria. Any other thoughts on this issue?

MR. LORSON: If I could just add one thought related to remote inspections? With respect to some of the technology and the tools, there has been a benefit for us, particularly when it comes to off-hours event response.

In some cases, we've seen situations where the plant may trip in the middle of the night.

In the past, the resident inspector might leave his house and drive in the plant early in the morning whereas now we can use our remote tools to determine whether or not we need to go in immediately or if we can wait a little while.

So, we have achieved some of the benefits but I would also echo what Scott talked about, there's really no substitute for direct onsite visual inspection.

COMMISSIONER BARAN: Thanks, Ray. Ed, you have something you want to add as well?

MR. SEMANCIK: Yes, just as an outsider,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

first of all, I think what the inspections teams have done is amazing to deal with this crisis. And certainly at the height of the pandemic, there was very good reason to move to that remote posture.

But certainly, going forward I am impressed by the anecdotes that I have been hearing that there is no substituting for the onsite inspection.

I would submit that rather than remote tools be used in lieu of critical inspection functions, they be used to augment and supplement those.

And moving forward, once hopefully the public health emergency resolves, there should be the resumption of a more normal posture. That's my view, thank you.

COMMISSIONER BARAN: Jeff, do you have something you want to add as well?

MR. SEMANCIK: Yes, I'll just also echo Ed. The presence of NRC resident inspectors on the site during the height of the pandemic was pretty quickly a public interest item that we got engaged in at the state level.

And I thought at least regionally here

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

they did a great job of keeping us informed of what was going on onsite, what was going on offsite, what was being done hybrid.

And I think also a good common focus on maintaining safety and integrity for the operators at the plant to make sure we weren't putting them at any additional risk that wasn't necessary for it.

But on the whole, I think it went very well and communication was good on it. So, thank you.

COMMISSIONER BARAN: Let's move to another question.

What impacts has the public health emergency had on nuclear power-plant sites and plant safety and what effect has it had on your organization's planning and staffing?

Jack, do you want to take the lead on this one?

MR. GIESSNER: Yes. When I think of this question I break it into two parts. I break it into the impact and safety on the people, the people who running the plant and the oversight, and I also base it on plant safety.

They are not mutually exclusive, nor does

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

one guarantee the other. So, when we work on looking at this issue, let's face it, this is a huge challenge and continues to be a huge challenge to the families, to the people.

But the processes and the procedures and the contingencies that the utilities built and the processes and procedures and contingencies the NRC built and frankly, the exemptions that provided that temporary flexibility by the program office at Headquarters ensured the plants continued to operate safely.

I don't want to underestimate the impact to the people. When we initially started the protocols, generally more than what was implemented by the federal outlines, we as good neighbors at the NRC followed those, whether it was masking, social distancing, and testing, we were able to provide that framework.

The resident inspectors went in periodically, every couple days, and some inspections were continued. Our operator licensing needed to continue, it was a mission-critical function.

So, I wanted to make sure folks understand there's a huge challenge to the people but

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

that balance of ensuring safety of our inspectors, safety of the utility folks, we needed to meet and ensure we could oversee correctly and also ensure the safe operations of the plant continued.

We came up with a methodology and looked at yourself, looked at the outside community, looked at the site, and then we looked at the risk.

Ray mentioned we might not have gone in for a trip, but if it was a complex evolution, it could have been a difficult item in an outage, incident response, especially on the SIT teams, we would send those out. They would take the appropriate precautions.

So, in short, we did ensure plants operated safely. Big challenges continue with the Staff and we continue to work through the processes that we have with the help from our folks in the program office.

That's all I had, Commissioner.

COMMISSIONER BARAN: Jeff, did you have anything to add on this one?

MR. SEMANCIK: There's a couple of things I would say from the local perspective.

The first part is early in the pandemic

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

we worked with plant staff at the local power-plant to do things like get them priority access to offsite testing when that was running scarce, get them on vaccine lists for critical workers and in the right phases of those.

So, we helped do our part as partners in the area. The other thing we did is we took a strong look at our offsite emergency plan for the COVID-19 pandemic, again during the early parts prior to deployment of vaccines and other measures.

We really took a look at would we shelter in place versus aggregation of large personnel, where we could do hybrid on the offsite response teams, and how we could minimize spreads on that.

So, through that whole process we engaged with all the stakeholders and were able to really I think come up with some of those modifications and also to exercise those modifications by continuing to do some drills to demonstrate proficiency in those.

Thanks.

COMMISSIONER BARAN: Any other comments on this question?

MR. MORRIS: If you don't mind, Commissioner, I'll put in a shameless plug for a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

session I'll be facilitating tomorrow morning where we had a real-time opportunity to respond to a real-world event, Hurricane Ida going through Southern Louisiana right over the Waterford site and how all of us worked together to combat that in a COVID-19 public health emergency environment.

We'll explore some of these issues related to this question during that session as well.

COMMISSIONER BARAN: Sounds good, let's turn to Kelvin next.

MR. HENDERSON: So, it really did have an impact really only on how we execute our business at the plant.

Our key resources such as operators, maintenance, radiation protection, chemistry folks, the folks that were on the plant day in and day out, they were there from day one of the public health crisis and they were there through the end.

We learned how to operate by coaching each other from a safety standpoint. Social distancing, wearing of masks, things of that nature. The people that were sent home and working remotely, they still came in for critical evolutions.

So, from a plant safety standpoint, plant

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

safety was never jeopardized or even challenged, it was just how we executed. We executed all of our refueling outages in 2020 and 2021 and we were able to do it successfully within the bounds of the allocation for those outages.

So, the organization really learned to adapt and we're carrying some of those learnings to how we operate today.

COMMISSIONER BARAN: It looks like Maria and Ed both have comments. Let's start with Maria and then go to Ed.

MS. LACAL: I think we would be remiss to not recognize the support from the NRC on exemptions to the workout rules.

We submitted those on the spot, very, very timely support so I just really appreciate and thank the NRC for their quick turnaround on those sorts of things.

Much like Kelvin said, we've got two refueling outages every year so we executed all four of our refueling outages without really any incident whatsoever.

I think one of the things that we quickly learned was how important it is to be intentional

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

regarding staying connected to the remote workforce and making sure that we had leaders checking in on them and having that heightened communication just to make sure they're onsite as well.

Because they work here on site and we want to make sure things were operating well from home. That was a big learning for us as well.

COMMISSIONER BARAN: Ed?

MR. LYMAN: From the public perspective, it's a little hard for us to really assess the impact of all this, so I hope the NRC will be collecting data in a form that's publicly accessible so that we can see for the usual metrics how safety may or may not have been maintained during this period.

I've been doing my own non-scientific analysis so with regards to one planner at least unplanned SCRAMS, it looks like 2021 was actually lower than it's been.

So, I can't say anything from one data-point but it doesn't look like there was a sudden explosion of operator error and deferred maintenance-related SCRAMS. So that's positive and again, I'd love to see a comprehensive analysis once the situation is settled, thank you.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

COMMISSIONER BARAN: Any other thoughts on this question before we move on to the next one? A new feature of the reactor oversight process is the very low safety significance issue resolution or the LSIR process.

We got one question about this already. Ray, can you describe the process and give us a regional perspective on it? I'd also like to hear what the non-NRC panelists think about the process of how it's being implemented.

MR. LORSON: The very low safety significance issue resolution process, or VLSIR, was incorporated into our inspection program in 2019.

And what we did was we had a lot of internal discussion and we developed a process so that we could take issues that previously we might spend an awful lot of time on that we would acknowledge were very low significance, but we were trying to do further investigation to determine if there was an actual violation or not or a regulatory requirement.

And so what the VLSIR process achieved for us, and folks can refer to it, it's Manual Chapter 612, it allowed us to make a conscious decision for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

some issues that are of low risk significance to not expend an inordinate amount of time trying to determine if there was an underlying compliance issue or not.

So, it was just another tool that we had to allow us to better focus our efforts. So, that at a high level is what it is. It's been used successfully approximately a dozen times across the agency that I'm aware of so it is being used.

It's something we routinely think about as we're pursuing issues. That's a little bit about what LSIR is, it's probably also worth talking about what it is not. And it's not a substitute for restoring compliance.

If we determine that there's a compliance issue and we take some type of formal action, let's say for example an enforcement action, the issue still has to be addressed and if there's a disagreement with the action we've taken, then there would be a process for contesting that.

And so that would be outside the LSIR process but it would be an avenue by which a licensee could express disagreement with a conclusion we've reached. Or if we've reached a conclusion and taken

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

an enforcement action but we all agree it's of low significance, the licensee has other means they can use to remedy the issue.

For example, they could correct the condition or they could request an exemption. To that extent, a couple years ago NRR developed a risk-informed process for requesting the exemption.

That streamlines the exemption process. So, all three processes all work together if you will and I think it's just important that we all recognize the importance that the VLSIR tool has provided to us to focus our time on things that are most important.

COMMISSIONER BARAN: Thanks for that overview, Ray. Maria, do you have thoughts on this?

MS. LACAL: Yes, Commissioner, thanks. I agree with Ray, this is a very effective way of using our precious resources.

I think we had a really good example recently with the use of this process during the NRC's review of an interim change that we made to Staff augmentation time due to the COVID-19 public health emergency.

This was an emergency response organization, staff augmentation time change and so

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

the NRC in their review raised some questions regarding facility augmentation times that have been resolved with the NRC really decades earlier.

And so the NRC originally had approved our emergency response organization change to the augmentation time. Back in the early 1990s, 1994, the letters with the NRC region versus NRR and that approval letter at the time didn't have a safety evaluation.

And so even though our example didn't exactly fit into the type of cases that I think were originally believed to be part of this VLSIR process, in our case emergency plan, the team really quickly and effectively resolved and saved a lot of time and resources again due in large part to the NRC's application with this process.

So, it was captured on a condition report and now we've included the basis for the original approval.

So, I agree that really focusing our time and energy on the more safety-significant issues mitigates our distraction on the lower-level things and really helps us maintain laser focus on the things that we need to.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

And actually, at the end, it ultimately improves our nuclear safety posture. So, I appreciate the work that was involved in that application for us.

COMMISSIONER BARAN: Jeff, do you have thoughts on this?

MR. SEMANCIK: Time will tell certainly on this to some extent as we see more of these issues resolved this way. I think there is a challenge with complicating an already complicated process from the public's point of view.

It's just more adjectives thrown on and a little more screen, it looks like there's a problem that's not getting fixed with that appearance. So, I think I'll withhold judgment on it from that point of view, but I think the public struggles with resource balance of utilities.

And the NRC, with respect to running nuclear power-plants, they see it as an endless resource and the stuff we have to monitor, I do applaud the fact that at least the documentation of this in the inspection reports gives us all a chance to look at it in the public view and see what happens.

So, I think the book is still open a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

little bit on it but there is obviously some benefit to it in general. I just have to be cautious about how we approach it and make sure the public fully understands.

COMMISSIONER BARAN: Thanks, Jeff, and of course it is a new process. Laura, do you have thoughts you want to share on this?

MS. DUDES: Thanks, and I really appreciated Jeff's comments about the documentation because I think it's important to recognize there's transparency in this process and we're sharing with everyone, here's what we're doing with this, we're not pursuing it at this time.

And then it's all important to realize that if new information becomes available to the NRC or the licensee, it doesn't preclude us from revisiting this issue at a different time.

So, I really just wanted to highlight the transparency of the process. Thank you.

COMMISSIONER BARAN: Ed, do you have something you want to share?

MR. LYMAN: Yes, and I think Jeff hit the nail on the head.

From our perspective, if there's a safety

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

problem and it looks like the lay characterization of this process is maybe it's not worth trying to figure out whether or not it's an actual violation, and even if we do that, maybe we'll not require that it be fixed.

Those are problematic for us and this stems from our concern about perhaps the overuse and overlying site PRA in these inspection determinations. I think we would want more assurance that these are really very low safety significance and I'm not sure that's always borne out by the PRA analysis, because as we all know, there are uncertainties and deficiencies in missions and the use of things like flex credit, which I'll talk about later, which we have concerns about because of their potential lack of validation.

So, we don't want to see safety issues essentially being thrown out because no one wants to take the time to dig through the history and find out if it's really a violation or not.

That says something about the way this licensing basis has evolved and it would be great to take a fresh look, I agree, at the safety significance but maybe not the way it's playing out here.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

COMMISSIONER BARAN: Any final thoughts on this question before we move on to the next?

MR. MORRIS: Yes, I had a thought on this. I think really, the main genesis of this whole process, the safety significance piece is certainly an element of it but the real driver for me in our experience at least in Region 4 has been when you talk about is it or isn't it a violation, what we're really talking about is the licensing basis around this issue clear or not?

Or is it ambiguous?

If that's the case and it happens to be low significance from a safety or risk standpoint, then the LSIR, exercising VLSIR, and all the transparency that Laura talked about is going to happen.

So, it really gets to the ambiguity of the licensing basis given the issue, not the safety significance solely.

And I will say if there is a safety-significant issue and it's not in the licensing basis, we're still going to deal with it.

We're not going to walk away from a safety-significant issue regardless of whether or not

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

it's in the licensing basis.

COMMISSIONER BARAN: Any other thoughts?
Ed looks tempted to respond.

MR. LYMAN: Then you get into backfit space and that's the problem. If it's too hard to follow through on a back fit, that's a very blunt sword you have.

COMMISSIONER BARAN: Jeff, go ahead.

MR. SEMANCIK: I would also indicate that from a reassurance to the public thing, you have an ambiguous licensing basis and don't really understand it so therefore won't pursue it is less than satisfying.

So, I think if there's an ambiguous licensing basis, some effort to resolve and clarify that would make sense to me.

MR. MORRIS: It's a question of the amount of resources necessary to do that. In a world of limited resources, we obviously want to be risk-smart and focus on the most important things.

But your points are very well taken.

COMMISSIONER BARAN: Good discussion on this, it's kind of early days on this program and we welcome the feedback today on going forward on it.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

Let's turn to a question from the audience and maybe I'll ask Laura to answer this or take a first stab at it.

With retirements and other attrition contributors depleting the workforce of inspectors, what incentives, training, and knowledge management programs are being employed to ensure new inspectors are being recruited, educated, and maintained in the most efficient way?

MS. DUDES: Great question, although I think we could have had a whole RIC session on VLSIR given the very spirited conversation. But I like look forward to in terms of the next generation of NRC inspectors and our EDO, Dan Dorman, has a focus on hiring for this year.

And he's got all of the senior leadership focused on hiring. And then I think the question gets to the fact of once you hire them, how do you transfer 30, 40 years of inspection knowledge to this new generation?

We have multiple strategies in place. I think one of the things we're really proud of now is our Nuclipedia, or our Wiki tool that's a great knowledge management tool that people post videos and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

discussions about knowledge management.

And the great thing is it is a one-stop shop and as we build that it will continue to grow in terms of knowledge management.

But beyond that, we're really focused on competency modeling, which is a qualification process, really identifying what competencies are needed for inspectors, aligning them with senior inspectors so they're able to work and get on-the-job training.

And then competency-based qualifications is another item that we're focused on to make sure that our inspectors are really getting a 360-degree knowledge transfer and training.

NRC always has very good training programs and we continue to use our effective training center to give people firsthand experience in simulators and then working with our operator licensing folks because they also have a tremendous amount of plant knowledge.

So, I think there's a lot out there but this is something that we are all as a senior leadership team laser focused on as we look at the demographics of the Agency and how we bring new people

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

in.

And I will say, the challenge that we have and one of the things that we're trying to communicate and coordinate on is we're bringing people in in a hybrid work environment.

And I think Scott mentioned this earlier in terms of the reasons we were able to be so successful with our remote inspections is because of the quality of our inspectors.

And so now as we are working in this hybrid environment we have to be incredibly intentional about taking our new hires, getting them out to the sites, having the senior inspector spend as much time in OJT as possible.

Let me pause there and see if there's other comments.

COMMISSIONER BARAN: Any other NRC folks want to weigh in?

MR. MORRIS: I will just say Laura's points are all absolutely dead on.

We've taken other steps, we have weekly question and answer sessions in the region for example, where anyone can come in, seasoned inspectors and brand-new ones and it's an open forum

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

where people can just ask questions.

What does this acronym mean? Why is this issue important? Why did you pursue this line of questioning? And just an open exchange that happens every week, very robust sessions. We do inspection debriefs every time we have an inspection.

That inspector comes back and debriefs to their colleagues what they did and what they found and there's an opportunity for conversation and learning there. We're trying to take advantage of opportunities at the sites.

I know a lot of Region 4 sites, we've had a fair amount of attrition in our resident inspector cadre and we've obviously got a lot of new folks out there. But we try to match them up with seasoned people and we're putting a lot of our newer hires out in the field for observational rotational assignments and details.

Again, it's to maximize that OJT and accelerate that learning. We all know that training and qualification is great, it's important, but it doesn't make you a proficient inspector.

Proficiency comes with time and wisdom and just being out there.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

COMMISSIONER BARAN: Let me ask a related question so folks can keep answering this one but I'll throw this in as well.

We had an audience question of how do you deal with the challenge in terms of mentoring new staff where you have the more experienced inspectors who may be busy or overworked as is and may not have the time that they would want to have to mentor.

How does the Agency address that to really make sure this vital part of the role of the more seasoned inspectors have the time and bandwidth to convey that knowledge and experience and help bring newer folks up to their level of capability?

MS. DUDES: I think that's a great question. This is a phrase that's often used, it takes a village, right? So, you need your entire organization engaged in attracting this talent and retaining the talent.

And so it's not just the seasoned inspectors.

I'll give you a great example. We have a lot of new resident inspector development program hires and so we had three Branch Chiefs take them up to the technical training center for three or four

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

days and they went through how do you respond to an incident?

They had the simulator going. That's just one example.

And so as an agency and organization, we need to utilize all the resources that we have, bring people together for intentional focused training on specific topics so it's not just hooking them up with a senior inspector but it's using the Branch Chiefs and using the former inspectors at Headquarters and seeing if you can have specialized topic sessions.

So, again, you're giving the employee a full 360 experience with the tremendous skills and experience we have in the Agency.

COMMISSIONER BARAN: Scott, you have something you want to add?

MR. MORRIS: Yes, just real quick, every NRC employee has a performance plan that becomes the foundation of their individual performance assessment at the end of every year.

One of the elements of every individual's performance plan including our inspectors is this notion of organizational effectiveness. What have you done to help the organization get better?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

Not just what you've done to develop yourself personally and professionally in your own career, but what have you done to contribute to the whole organization?

And so directly to your question, mentoring is one way of doing it, imparting knowledge, creating Nuclipedia pages, conducting cam and knowledge management sessions and on and on and on.

So, it is an overt expectation on the part of our staff.

COMMISSIONER BARAN: Any other thoughts on this before we move on to another question? Let me ask one about inspection findings, since 2015, the number of nationwide inspection findings has declined from 821 per year to 269 per year.

That's a 67 percent decline. All 4 regions have seen this trend in inspection findings. What do you think is driving the significant decline in inspection findings and are you concerned about it?

Who wants to chime in on this one?

MR. MORRIS: I would be happy to but I feel like I've been throwing in too much. I'll just

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

kick it off then. Yes, am I concerned about it? No.
Is it something we need to pay attention to? Yes.

Have we done analyses, detailed analyses, to try to understand the drivers? Yes. In fact, NRR teamed up with us and they did a very detailed analysis of this very issue and what were the drivers behind it?

And I think that analysis is available and it was done about eight or nine management so I don't remember all the details. But I will say the main drivers in my opinion and what came out of that analysis, many aspects.

Number one, we are more focused on spending time on risk-significant issues and we did more focused on the threshold between what's truly minor and what's more than minor and therefore gets documented in a report?

So, there's more scrutiny of that, there's more questions being posed by Branch Chiefs and others during these inspection debriefs for example, where folks are saying why is this more than minor?

I think many people would be surprised the kind of dialog that happens in those inspection

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

debriefs. There's a lot of why did you even look at that? Or why are you even talking about this? How does this meet the minor, more than minor or exceed the criteria?

That's one piece of it. Risk models are better, there's more margin that's been identified so the significance of issues that are identified are now potentially less risk-significant than we once thought because the modeling is better.

I think this notion of consistency among regions, there's been a lot more cross-talk, a lot more dialog across and between regions to make sure there's better alignment, sharing of examples to help people understand.

And there's a whole bunch of other reasons but one of the bigger and most fascinating things that I recall from the NRR analysis last year, one of the biggest drivers was this notion of management, really questioning and challenging inspectors on whether or not an issue that they're working on or have raised really meets the criteria of being more than minor.

There's a lot more focus on that and I think in my estimation, that's a big driver here.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

And I would be remiss if I didn't say something about industry performance. I think the industry collectively is performing.

They continue to show improvement year over year I think, there's a lot of data to support that, not necessarily NRC data. I'll stop there.

COMMISSIONER BARAN: Jack, do you have thoughts you want to share?

MR. GIESSNER: Yes, I do. First, I want to say that at least the preliminary data we have for 2021 shows I think a 15 to 20 percent increase in findings and I think in 2020 there was probably less onsite time.

So, we'll get that data so this precipitous drop that people are worried about, I do sense that we're coming to this level. I agree with Scott's assessment that it's probably complex.

The one thing I wanted to add is I do think the backfit training added a lot of value, things were Criterion 3 in the past. We've done a good job focusing on that.

But one thing that is slightly different than Scott is concern is not a bad thing, I just have a little concern because in some of the feedback maybe

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

some inspectors won't bring up these very low issues.

And it's not that somebody is saying they're just going to not inspect and just bring up issues, but when you hear there's potential culture perspectives in there it gives me pause.

So, I like to pull the data.

I do think we have more work to do to ensure that it is a combination of better ideas from minor industry performance, understanding backfit, but anytime there's a drop like that, I want to make sure we're focused on the engagement with the frontline inspectors, our specialty inspectors, and residents to make sure there isn't something there we need to address.

I think it's something that's always on our radar and we are going to get feedback on it. That's my two cents, Commissioner.

COMMISSIONER BARAN: Let's get one more NRC perspective and then maybe hear from some of our external panelists too. Ray, do you have thoughts?

MR. LORSON: Yes, just briefly, I agree with everything that Jack and Scott have already discussed but I'd particularly like to focus on...concern is not the right term but I just want to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

make sure we're not putting unnecessary barriers in place that preclude the inspector from going off and identifying issues and bringing them to fruition if you will.

We were aware of the survey that was done of inspectors that NRR had developed a report for and on the topic that Scott brought up of management engagement, we are very concerned that making sure what we're doing as a management team in terms of our actions, behaviors are not precluding or inhibiting inspectors from identifying issues or pushing issues to their final conclusion.

And so we basically called SKIP-level meetings where myself and David Lew, the regional administrator, met with every inspector in the region just to try to get their perspectives and make sure we were not behaving in a way that put forth these artificial barriers.

So, we were very pleased with the results of that but that was not necessarily concerning but we just wanted to make sure we weren't making it too hard on folks. Thanks.

COMMISSIONER BARAN: Ed, do you have something you want to say on this topic?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

MR. LYMAN: I hope this is tied to better performance and not a dynamic where inspectors are afraid to raise issues because they get too much pushback.

And if Scott is referring to the same report, I recall that conclusion was there was no clear improvement in the overall safety performance in the explanation.

So, that makes me concerned and it's not just the total number of findings but it's also the number of findings that are escalator engraved in green. And I did hear also in ROP meetings that the use of flex credit has significantly dropped the number of grey and green findings.

And that might be one factor, and that again concerns me because of the potential lack of validation for not only flex human error probabilities but also flex equipment reliability that I think we'll be talking about later.

So, I would certainly not want to see a dynamic where there's pressure on inspectors not to rock the boat and allow these findings to be missed or not dealt with.

And as with the low safety significance

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

resolution process, the accumulation or the aggregation of minor findings could lead to something that's greater than the sum of its parts.

That's my concern, thank you.

COMMISSIONER BARAN: Jeff, do you want to chime in?

MR. SEMANCIK: Just a couple of things. It would be nice to have a comprehensive review and evaluation of the drop vice anecdotal evidence on there to really understand what are the drivers and determine those.

That would be helpful, especially with maybe some outside perspective as well into some comprehensive review on that.

And then I would just caution that you wonder from an external point of view, the previous discussion about bringing on new Staff and experience, does that tie into the ability to identify findings or the willingness to raise them?

But again, that would also be anecdotal and speculative but it would be good to have that good understanding because I think certainly, if a utility had a drop of 67 percent in the number of condition reports they were submitting, we'd

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

certainly be interested to understand what the difference was that caused that.

COMMISSIONER BARAN: Anyone else want to weigh in on this issue? Maria, did you have something you wanted add?

MH: I just wanted to add a couple of things. Let's not forget about INPO, INPO has been just a phenomenal standard-setter with standards of excellence that we all have to meet.

And I think that definitely has helped us to continue our performance in all aspects of operation. Actually, NEI put out a really good document in 2020, it's NEI 2004.

It's called the nexus between safety and operational performance in the U.S. nuclear industry and it clearly shows how the industry has continued to improve its safety posture year over year.

A lot has to do with the regulations that have been imposed over this timeframe but clearly, it shows that the industry in general has the ability to improve.

And it looks at a lot of different areas and there's a lot of good metrics there, and there's a lot of really good basis behind this analysis which

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

a lot of the information comes from the NRC.

So, that's a pretty good document to take a look at and really, truly understand the improvements that the industry has shown in safety over the last 10, 20 years.

I think also just like the NRC does and shares amongst the different regions, we do the same thing. We share amongst the different sites on inspection findings, we do assessments across sites in preparation for inspections.

Clearly, our problem resolution identification programs continue to strengthen and that includes low-level trending and analysis, our issue evaluations and looking for that extended condition and making sure that we close the issues with a lot of rigor in looking for similar gaps in other programs or processes or equipment, et cetera.

All of those things truly have I believe kept us focused on the important things and I think the risk-informing regulations and that risk-informed thinking really helps us focus on the more safety-significant issues, getting those resolved quickly and early.

COMMISSIONER BARAN: Kelvin, did you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

want to jump in?

MR. HENDERSON: The only thing I would add to Maria's comment, it also starts with leadership and leadership behaviors and the drive for continuous improvement and really identifying issues at such low levels that we promptly get those created.

And that starts with me as a CNO setting the tone throughout the organization that our purpose is to find our own purpose and make sure that we quickly identify those and quickly get them into the corrective action program and place the right sense of urgency to get them resolved.

And I think that is reflected in what we're seeing as far as industry performance over the past few years. I think it's a direct tie to it but it really starts with us as CNOs and the tone that we set with our organizations.

COMMISSIONER BARAN: I think it's been a good discussion. In the course of the discussion up to this point, we heard a couple of references to flex equipment.

Let me ask a question on that, one of the most significant post-Fukushima safety enhancements is the presence of flex equipment at reactor sites.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

Maria or Kelvin, can you discuss flex operating experience?

And if other panelists want to weigh in about what has been learned about the maintenance and use of flex equipment?

Maria, you want to start?

MS. LACAL: When flex came up a number of years ago, we really focused on how do we make our dollars count, not just during the emergency but in our day-to-day operation of our plants?

So, if we're going to spend this large amount of money and resources on flex, let's make sure that we design and follow modifications and procure our flex equipment such that it will help us increase our margins of safety from a day-to-day perspective.

So, that was big focus for us from day one, maximizing our use of flex to maximize our safety posture. I'll say that at Palo Verde we extensively use our flex and portable equipment as mitigating actions for maintenance rule.

We routinely deploy our flex team generator makeups and our portable DC generators to mitigate risk during certain planned maintenance

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

activities as well as an emerging equipment issue.

It's baked into our procedures and so it's really part of our work management process now as part of our planned maintenance activities. It maintains our risk profiles low in the green band and making sure we have the right purpose and attention on our risk management action levels.

I'll say prior to flex our outages were such that we would be in yellow risk for almost the entire outage with clearly a large part of our refueling outages.

And now with the deployment of flex we maintain low in the green band posture throughout our entire outage duration.

Our modifications for the connections to flex equipment were designed so that it kept our operators in line and making sure that performance was top of mind so they had easy access, all external connections.

They don't require any doors or anything to be left open where we don't traverse cables and hoses, et cetera, throughout the site.

The other thing I think that we learned a lot is the proficiency and we talked about that a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

little bit of our operators and our maintenance personnel from deploying this equipment a lot. They've got a very high level of proficiency regarding the use of the equipment.

At Palo Verde we're fortunate to have a standalone fire protection department and that consists of full-time firefighters, maintenance personnel and engineering personnel.

And so our fire protection maintenance organization do a fantastic job maintaining our flex equipment in very top shape, keeping sure that we maintain through the requisite numbers and they ensure that we do all the preventative maintenance, et cetera.

I'll say we had early on some indication of some battery failure issues which we communicated to the industry and we have since resolved those but as an industry we collaborate.

There's a committee that's focused on flex equipment, sharing operating experience, having routine communications around these. We have dedicated program owners to share this operating experience.

We've partnered with EPRI to capture the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

data that we have across all of the stations to make sure that we've got a good reliable database and that we share best practices.

So, this is all in a very shareable retrievable database for knowledge retention and I think just continued interaction between INPO and EPRI and the industry, sharing that operating experience and using our flex equipment has just been very, very valuable from a reduction of I'll say an increase to safety as a result of flex.

COMMISSIONER BARAN: I think a lot of panelists want to weigh in on this one. How about we have the order be Kelvin and then Jeff can weigh in and if Ed wants to weigh in and then Ray?

MR. HENDERSON: Thank you, Commissioner.

I agree with everything, obviously, Maria said and the interesting thing is I can remember when we first put flex in place, it was equipment that existed and now it's more part of our overall risk reduction strategy that's ingrained in all of our procedures.

Maria mentioned how it's deployed during refueling outages where in the past we would have elevated risk levels during certain configurations in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

the refueling outage.

Now our procedures will require use of staging flex and make sure we have the right things in place to minimize that risk.

We also have leveraged opportunities where we've had degraded components online and we've taken the opportunity where we can take that component out of service online by deploying flex that would allow us to improve the reliability of that safety piece of equipment.

And obviously, overall improve plant safety.

In the past, we really didn't have that flexibility but all that's ingrained now in our procedures and processes and strategies so it's not just equipment that exists, it's really part of our overall strategy in how we manage risk.

COMMISSIONER BARAN: Jeff?

MR. SEMANCIK: I would think in general we really applaud the use of flex and the implementation of flex.

In general the response to Fukushima, it provides a real tangible benefit that we can articulate to the public and demonstrate a commitment

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

to safety as opposed to a reanalysis or a refinement of something there.

So, from the public perspective, they see an action, it's good, and I also applaud the use of it to reduce real risk in refueling outages and online issues. So, we do appreciate that because ultimately, that improves safety for all of us.

I think the one part I would like to see is it integrated more in emergency plan exercises and just challenging it in those timeframes to see its use in those roles.

It would also allow the offsite folks to internalize the ability to have that equipment on and prioritize actions to assist in responding to those types of events.

COMMISSIONER BARAN: Ed, do you have thoughts?

MR. LYMAN: Yes, I already raised this a couple of times.

I think the main problem here is the regulatory footprint and since the beginning, we did not think the current requirements for maintenance inspections and flex equipment were sufficient given their importance.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

And given they're now being relied on for these other uses including pretty safety-significant maintenance tasks that it's important that the credit for flex does not go beyond the level of reliability and assurance that the NRC has over that equipment.

So, looking at the issues at River Bend and Clinton with the diesel generators and potential common cause failures, I'd like to have more confidence that the NRC has the regulatory authority to make sure that equipment is in adequate working order, again commensurate with its potential expanded uses.

COMMISSIONER BARAN: Ray, do you want to go next? And maybe just for those who are familiar in the audience with River Bend maybe just talk a minute about that or Scott can chime in on that too so people have that background.

MR. LORSON: Scott, do you want to go over River Bend and then I'll follow you?

MR. MORRIS: It's all a matter of public record at this point but I will say in essence, it came down to a number of portable diesel generators that unfortunately when they went to start them, they didn't start or they started but didn't continue to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

run for a variety of different reasons.

And ultimately it got traced back to maintenance practices, preventative maintenance practices and some initiate design issues.

And we obviously expanded our sample and look at that issue across the fleet particularly in Region 4 and particularly the Entergy fleet since River Bend is one of the Entergy facilities.

So, at the end of the day, yes, there were challenges with that, I don't want to go into a lot of detail.

I will say that when the initial inspection, we called it a temporary instruction, was performed by the NRC Staff, after all licensees had essentially reported in that they had completed implementation of their flex strategies, our inspections at that stage were more are the licensee strategies for flex in line with EPRI's NEI guidelines that we had endorsed?

And had training been performed, were procedures available, that type of thing.

Those inspections, those initial inspections, were not what I'll call design inspections where we actually looked at the design of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

the generator and looked at was the manner in which the system installed or built in line with the design that had been proposed or ordered or expected?

Those are the types of inspections we're doing now, we've moved to that degree of inspection as opposed to I don't want to say cursory but a high level have they taken steps to implement the guidelines, do the procedures and training exist?

Now we're taking a deeper look into some of what I'll call the engineering aspects of the equipment.

COMMISSIONER BARAN: Thanks for that background. Ray, do you want to take it from there?

MR. LORSON: Yes, I certainly agree with everything I heard. I think to Maria and Kelvin's point, obviously licensees have made big investments in flex and so they expect to see some credit in terms of the reduction in overall plant risk profiles.

And we would agree with that, installation of equipment that wasn't there originally can lower the risk profile. But, and I would add the caveat, if it's properly designed to perform the function and if it's properly maintained to perform the function.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

And so Scott talked about some of our initial actions we did in terms of inspections following the original implement of flex. We've embedded review and inspection of flex equipment as part of our baseline inspection program.

We have had some findings related to maintenance of flex equipment and to my knowledge, none of the findings have gone beyond the green range if you will. But certainly, we are finding issues.

We recently had a case of a significant diesel failure, a flex diesel failure, at one of our sites that we're still evaluating but the point is the diesel failed in a manner that hadn't been anticipated.

So, I think to Maria and Kelvin's point, flex does offer a benefit but the benefit is only achieved if the equipment is properly designed, installed, and maintained.

Second point with respect to use of risk, we agree with the reduction in risk in general space but I think Ed brings up a very good point, we need to be careful that we don't overcredit how much credit we give for the use of flex as a risk reduction tool.

And to that extent, we have used flex in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

terms of adjusting regional some findings where we've seen findings that have maybe gone from white to green when you consider flex.

We're very careful and mindful of how we do that in part because we think there's a level of uncertainty related to the reliability data associated with the flex equipment.

I know a key aspect of industry right now is trying to get better numbers that we can use to give ourselves more reliability with respect to the uncertainty of this equipment's performance.

So, it is a tool to lower inspection findings. That being said, we are very careful of how we use it and making sure that we're not using inappropriate assumptions related to how we use flex.

So, thank you.

COMMISSIONER BARAN: Good discussion, any other points anyone wants to make on this? We've got about 20 minutes left so I'll just give our audience a reminder that if you have a question, get it into the queue and I'll try to get to it.

Let's turn to one of the questions we got from the audience and it's about gazing into the future a little bit on inspection and also I'd maybe

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

expand it to operation of the plant.

Any considerations for future inspection using robots or artificial intelligence as an effective tool?

And maybe either one or both of CNOs want to chime in at all about the degree to which they're using AI or robotics at their plants, I think probably folks would be interested in that as well.

MR. HENDERSON: Commissioner, I'll start from a CNO perspective. We are really deploying use primarily of robotics.

We have robots that now can crawl pipes, we have robots that we can send into spaces where we would have to set up a different configuration to allow a person to go in that space, for example, from a dose standpoint.

We have robots that can walk up stairs, that can pick up things, that can take pictures and more in some hazardous environments.

And we've leveraged technology to identify early signs of equipment performance, we've used technology to pick up small vibrations even on large transformers.

And we're doing it from the standpoint

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

that it helps us optimize our staffing resources because before people would do all that and now we have robots that are able to go in and gather a lot of this data for us.

We're starting to work through use of artificial intelligence primarily on data analysis and things of that nature to help us predict either where we could have some performance challenges either with behavioral gaps or equipment gaps.

And we're pretty far along in that process and we're actually leveraging others in the industry on what they've learned through use of AI that a lot of technology uses, at least within the Duke system, that we've deployed here over the past few years.

COMMISSIONER BARAN: Any other thoughts from an NRC perspective, industry perspective, or other perspective?

MS. LACAL: I'll just add one more to Kelvin's list. We do a lot of very similar approach with the use of robotics in radiological-controlled areas and minimized dose, et cetera.

But also, we're using drones in our cooling towers and that has significantly saved, from

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

an investor safety perspective, not having to build scaffolding, et cetera, to try to get to all these areas way up high.

And so that's been a technology fairly recent that has proven to be very successful and you can get up close and personal to what you're trying to see through the use of these drones.

So, there's a lot of technology out there. I challenge our vendor partners every day.

They know a whole lot of more about what's going on globally and what's being used out there globally and bringing it back to us so that we can evaluate and assess whether it makes sense here in the United States and Palo Verde, et cetera.

And so that is a big focus area is how do we continue to use the technology to improve the way we do business to optimize the way we do business, whether it's robotics, drones, artificial intelligence, et cetera.

There was a really good session yesterday on the use of artificial intelligence at the RIC that was very good.

COMMISSIONER BARAN: I moderated a panel on artificial intelligence last year and it was just

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

fascinating. From the NRC folks, anything? Laura, do I see a hand up, or Jack?

MS. DUDES: I saw Jack. Why don't you start, Jack?

MR. GIESSNER: I was just making a quick comment. That is an area where we're going to have to get up to speed quickly.

I've heard a lot of utilities use artificial intelligence to cull through data and make decisions on what to maintain and that's an area where we don't have expertise but we will get the expertise.

We'll have to figure that out, that's an area that's on my to-do list looking forward to the future.

That's all I had, Commissioner, thanks. Go ahead, Laura.

MS. DUDES: Thanks, Jack. I think I agree with what Jack said and I think there's a lot of benefit to this.

I think we need to keep leaning forward, we need to get the expertise on AI but we also always have to be mindful of the cyber issue as well as we're deploying these technologies.

I'm all for it, I'm in favor, I've seen

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

drones go into containment to rapidly identify a leak. In the past you would have had to send humans in there. There was a lot of challenges with that. So, I think there's a lot of benefit to it.

I've actually driven one of the robots down at St. Lucy and actually, they use it to go into their resin rooms. That saved a tremendous amount of dose and that's really a positive for the workers' safety.

But again, we need to just proactively lean in and discuss the cyber issue and find solutions to that issue.

Because I think the technology is great and we should be deploying more of it but we always have to be mindful. And there's a solution for the cyber but we've all got to be coming to the table to talk about that. Thanks.

COMMISSIONER BARAN: Anything you wanted to add, Scott?

MR. MORRIS: Yes, Laura actually made a couple of the points I was going to make so I appreciate that also, and I agree with Jack.

At the end of the day, one of the products we produce as an organization is on behalf of the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

American people is our independent assessment of overall licensee performance relative to safety and security.

So, I think any of these tools, any and all, should be used, I'm certainly open to it. I'm admittedly a bit skeptical at this point, particularly when you move away from inspection and into assessment and particularly safety culture assessment.

I'm not quite sure how AI would necessarily help us with that but, hey, I'm open to the future. I need to know more I think. There's a lot to be learned here.

COMMISSIONER BARAN: Let's turn to another question, this one is probably more for the NRC folks. It's a follow-up on VLSIR.

The regions had firsthand experience using the VLSIR process and MSS so the material side of the house where NRC is currently evaluating how it can use VLSIR to address potential issues associated with extreme weather events during fuel offload activities. Are the regions engaging with NMSS to discuss how best to apply the VLSIR process to that kind of situation?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

MS. DUDES: The short answer is yes, we're actively engaged with the program office and we're talking through the various scenarios. But Ray did a very good job of talking about the distinction on VLSIR as is it a compliance issue or not?

And then the significance, I think we agree on the significance, we just need to make sure we work with the program office to identify the compliance aspects but, yes, we're very engaged in that issue.

COMMISSIONER BARAN: Here's another one. Have the regions identified any trends in inspections not being completed within the scheduled timeframe for requiring subsequent reactions?

If so, are there any insights you can share about that?

Any takers on this one?

MR. MORRIS: I'm struggling to come up with one but the one that leapt to my mind, and I don't know if it's a great example or not, but there are certain things that can only be done during planned outages, there are only certain times you can go into containment, et cetera, particularly in a boiling water reactor.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

So, we've had to defer some of that stuff and some of the required inspections that licensees have to perform have been deferred through the exemption process. So, it's been done proactively and deliberately with good thinking behind the how and why.

But for the most part, we've been able to get it done, it's just we've had to adapt and flex a little bit and leverage different resources. But I can't really think of an example that fits that.

Maybe my colleagues.

COMMISSIONER BARAN: Ray?

MR. LORSON: I can just follow on, Scott, and like Scott, I only know of one inspection that we were not able to complete during calendar year 2019. I don't know of any inspections that we were not able to complete in 2020.

2019 was a COVID-19-related impact, a short fuse opportunity that we just missed because you can only see certain things during certain times, as Scott mentioned. So, we haven't had a significant backlog of, if you will, uncompleted inspections.

We report on that every year to Congress and so we endeavor to complete the inspections on

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

time.

COMMISSIONER BARAN: Let's ask maybe a little bit more of a big-picture question. Jack, I'm sorry, did you want to get in?

MR. GIESSNER: Yes, in 2020 there were a couple inspections that we didn't do and we validated the reasonable assurance of safety by other means. A couple were security inspections and a couple, health physics inspections.

And those related to high COVID-19 incidents in the surrounding community and we were able to use the resident staff and the review of records to follow up and ensure that the delay in the inspection to the following year was okay.

And also, we also had containment entry where we elected based on where we were in COVID-19 to not do it and do it later on.

So, I think those are well documented on the public record and I think it shows, as I talked about before, the balance of safety of people and still ensuring safety of the plants.

So, I just wanted to highlight ours, thanks.

COMMISSIONER BARAN: Thanks, Jack. Let

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

me turn to the more big-picture question.

In your work, and this could really apply to the NRC folks or others, but in your work how do you ensure the interests of local and other non-licensee stakeholders are considered?

Does someone from the NRC want to start with that? Laura's going to take it.

MS. DUDES: To the extent that we can be engaged with our local community, that's the first step and I know we have made ourselves available and have gone out to various community activities such as the Investor River Walk or the Phidalia Onion Festival and had a booth.

And so we have to start to have a relationship with the community first and then if there are issues with that community, you can hear from them. But the first step is starting that relationship, engaging with people in the local area.

And then once you have that dialog and that relationship, their interests, their thoughts will be shared with you. I do know our residents will typically meet with local community leaders at least once a year.

So, it's really about listening first and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

developing relationships. I'll pause.

COMMISSIONER BARAN: Jeff, do you have something you want to share on this one?

MR. SEMANCIK: Yes, this is an interesting one out there.

I spent 23 years at a local power-plant as both the senior license operator and management, and when I came over to the state and became the state liaison officer I think I mentioned at one of the early conferences, I had more exposure to senior NRC leadership as a licensee than I did as the state liaison officer.

To the Commission's credit, I think you guys responded well to that but I also learned that I've got to really make those interests known. But I think there are some ways to make sure of that.

Commissioner Baran, you came up for a visit, I was informed of the visit, we had an opportunity to sit and meet and hear concerns we have. And I think it's important because while I may understand the authority of the Atomic Energy Act, the public really doesn't.

And so often my phone is the first one to ring with issues and concerns and things in the paper,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

and how the public might perceive it. And I think we're a valuable resource for that.

We've also worked through the National Organization and the Conference of Radiation Control Program Directors to form a working group of state representatives that have power-plants so we can keep an eye and look at some of those issues that might be affecting those and see that perspective.

And just reaching out for state and local partners is also important, I think we've learned that through the material side of the program and I think although it varies state to state how much interest is out there, I think we can be a valuable resource.

And the example I would provide is there's a production facility in New Haven here that has been remediated and the typical approach for the public meetings was put it on the website and let people come see.

We were able to reach out and let them know that New Haven has got a very unique community-led structure that's below the Mayor system.

We've got the team to the community management team meetings, meetings with the local

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

alders, and that really helped to get a lot of information out to the public and get some of those direct concerns for in this case a very EJ community that didn't have access to Internet and things like that.

And so getting those out there, we were able to help navigate that process. So, I think all those things are really important and I think state and local partners are a good starting point for it too.

COMMISSIONER BARAN: It looks like Ray is interested in chiming in and then Ed.

MR. LORSON: I agree with basically everything I heard from Jeff. We worked very hard to try to make it effective and strong relationship with our state partners.

Jeff, I know you've been out on inspections, I've been on inspections with you and so we do have a state liaison officers in each regional office that report directly to the regional administrator.

And so they keep our conduit with information and concerns where if there's something we're doing of interest, we want to communicate that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

to the states. So, we try to be very forward-leaning, very proactive in trying to maintain an effective working relationship.

We have memorandums of understanding with many of the states in our region and so often, while we have an inspection we'll make them aware of significant inspection activities in advance and invite them to come and participate in all of our inspections from an observation process.

The last point I want to make is we have a number of plants in Region 1 that are currently undergoing decommissioning, and as part of the decommissioning that is very much of course a public process.

And all of the sites have some form of some sort of citizens advisory panel and so we frequently would go and provide information upon request just to communicate with the local government officials and also with members of the public regarding what our activities entail and what's the next step in the cleanup process.

So, I think it's a very critical relationship, I appreciate Jeff's participation today and also everything you've done to help us interact

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

with things going on in Connecticut. Thanks, Jeff.

COMMISSIONER BARAN: Ed?

MR. LYMAN: Really quickly, I certainly would like to make a plea for more transparency and in this context, a lot of the processes we've been talking about are of a very low safety significance determinations, STP and significance determination process are all pretty inscrutable to the public and there's only so much you can do to explain those often complex proceedings.

But the more open and transparent you are about how decisions are made, I think the better, and that involves these qualitative aspects like the human element to weigh, as we heard, the dynamics of management inspections.

I think for inspector findings it's very interesting and humanizes the Agency, at least makes me understand that it's not just this mechanical black box but there is this human aspect to it and so subjective judgment.

COMMISSIONER BARAN: We have just a couple minutes left, I think we have time for one more question. As always, we have more questions coming in than we really have time to get to, but let

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

me ask this one and I'll just read this one.

The industry is adopting the so-called value-based maintenance and converting many time-based preventative maintenance work items to predictive maintenance.

And the question is interested in knowing I think at least NRC folks' view about whether existing compliance activities are going to be adequate to assess the safety impact of that, particularly if licensees are going below the manufacturer-recommended preventative maintenance work.

Any insights anyone wants to share on that in our last couple minutes?

MR. MORRIS: I will start by saying this, it's something we're aware of and focused on, Commissioner.

When it comes to key equipment, particularly safety-related or important to safety equipment or things that can cause plant trips and challenges, we do have a performance-based rule in place, 10 CFR 5065, affectionately known as the maintenance rule.

But it does factor in ultimately the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

performance of the equipment and condition monitoring of the equipment.

So, there is a role for modifying maintenance frequencies and test frequencies based on operating experience, based on better data and analytics.

But it has to be done in a measured way and I think our regulatory infrastructure is set up to detect significant challenges in that area should they manifest themselves.

COMMISSIONER BARAN: Any other thoughts on this issue? Jack?

MR. GIESSNER: I'll just add that a lot of the processes that have some risk-informed already have a feedback loop.

For example, the surveillance frequency control program, if you extend the frequency of what you do in your surveillance and you do have a failure, you're required to go back and reassess that.

So, in addition to the maintenance rule, the processes that are allowing the licensees a little more flexibility have a tool in them for feedback loop.

So, I think I agree with Scott we need to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

check on that and our processes are going to ensure we don't inadvertently miss that.

Jeff?

MR. SEMANCIK: One aspect of this that is I guess tangentially related or would go back to Ed's call for more transparency.

While generally we're supportive of risk-informed programs, some of them, like the surveillance frequency control program or 5069 for classification of components, once they're in house to the utility after the initial license amendment, the transparency of those changes is gone.

They become opaque and so you change a diesel surveillance frequency, there is no longer a public piece of that, there's no longer opportunity for state and local feedback on those processes.

So, unlike 5059, which kind of has that annual report that talks about what safety evals were done, a lot of these programs -- I think especially in aggregate it would be nice to see something that enhances the transparency, even if it's a review after the fact to understand what major changes were done, so that folks outside of the NRC and the licensee are aware of them.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309

COMMISSIONER BARAN: I think we have to stop at that suggestion. It's been a great discussion I think.

Thank you all to all of our terrific panelists, I think we covered a lot of ground and a lot of different topics and got a variety of perspectives on so many them.

Thank you all and thank you to those who have been watching and submitting questions, we really appreciate it. Sorry we didn't get to all of them but I think we got to almost all of them.

So, thanks so much and enjoy the rest of your day, everyone.

(Whereupon, the above-entitled matter went off the record at 2:30 p.m.)

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1716 14th STREET, N.W., SUITE 200
WASHINGTON, D.C. 20009-4309