



NRC NEWS

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**Remarks Prepared for NRC Commissioner Dale E. Klein
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Good morning. I appreciate the invitation to speak to you today. This morning I would like to share with you three things: a compliment, a caution, and a challenge.

First, the compliment. I recently gave a speech to some Federal Aviation Administration regulators that was well received. That's not the compliment, by the way! I explained how the Three Mile Island accident in 1979 was a wake-up call for both the NRC and industry, and that one of the best things industry did in response was to create the Institute of Nuclear Power Operations. I suggested that this was something the FAA regulators might mention to the airline industry, because INPO has played an important part in establishing the strong safety record the nuclear power industry has had over the last few decades. Not a perfect record, of course, and I will come back to that in a moment.

But while the American Nuclear Society as an organization has a very different structure and purpose, I think it is important to note that the ANS also serves a very valuable purpose in educating the public on nuclear issues, fostering professionalism and high standards in the field, and sponsoring technical forums and research to help promote nuclear safety. I want to thank all of the members and the leadership of the ANS for this work and to tell you that it does not go unnoticed or unappreciated.

I am especially glad that the ANS is devoting significant attention – as you do every year – to the issue of materials degradation and especially potential life extensions for nuclear power plants beyond 60 years. This is a subject I have made a point of highlighting at the NRC. More than a year ago, I kicked off a workshop that brought together NRC, DOE, industry, and other stakeholders to start thinking about the issues that would need to be addressed in order to prepare for a possible second round of license renewals, such as aging cables and concrete, the effects of radiation on reactor vessels and vessel heads, instrumentation and controls, and many other

areas. So I am pleased to see that the ANS is continuing to focus on the question of “life after 60” at this conference.

That was the compliment; now for the caution. The subject of materials degradation is not simply a matter of speculation for the future. A number of instances in recent years make it clear that this is a concern right now. During my time on the NRC, I have seen plants experience the following:

- Cooling towers collapsing
- Leaks in underground piping
- Circumferential crack indications in a pressurizer nozzle weld.

Not to mention:

- Spent fuel pool leaks
- Transformer failures
- Tritium leaks
- Degraded underground cables
- And other issues.

From the perspective of risk-informed analysis, most of the items I listed were not matters of significant safety risk. But let me stress that low-risk significance of an issue is sometimes irrelevant in the eyes of the public, and these incidents can undermine public confidence.

I mentioned INPO a moment ago, so let me repeat a story I told at the INPO meeting two years ago. In the early 1980s, a sociologist named James Q. Wilson pioneered the so-called “broken windows” theory of law-enforcement. The idea was that when small signs of disorder or decay – such as vandalism and graffiti – are allowed to persist, it leads to bigger crimes because people assume that the neighborhood does not have any standards and that no one is enforcing the law. So if you enforce the laws against littering, you will eventually get fewer robberies. This theory was actually put into practice in several major cities and led to major reductions in crimes. One lesson we can take from this theory is that perception leads to reality.

If the public believes that standards at nuclear plants are not being achieved, it leads to an erosion of public confidence in the entire nuclear energy industry. On the other hand, when industry does its job, it leads to public confidence in nuclear power more broadly, which lends credence to the work of the NRC. And when we, in turn, hold the utilities to a high standard of safety and security, it enhances confidence in the job you are doing.

The second reason these issues are important is also connected to perception and reality. I am referring to the idea that complacency in small things leads to complacency about larger matters. Assuming that the NRC grants the Combined Licenses and the new plants are built, some of the new reactors will have many more passive safety features. And several things that are safety related in today’s plants may not be safety related in future plants, such as the essential service water system. My concern is that operators might become complacent about all those features that are no longer safety-related and thus no longer require a high level of active attention. That cannot be allowed to happen. An over-reliance on the plant’s design to ensure

safety, and the assumption that technology alone could make nuclear power plants safe, was one of the central causes of the Three Mile Island accident. Now, I'm not suggesting or advocating more regulatory requirements here although I can't rule that out if they are warranted. However, what I am emphasizing here is that a constant focus on maintaining a strong safety culture throughout the *entire* plant is, and will be, essential, both for the sake of public confidence and for avoiding complacency.

Let me now turn to the challenge and in doing so, I would like to commend some excellent work done by the NRC staff.

The Commission now has a draft final rule that provides alternate fracture toughness requirements for protection against pressurized thermal shock events for pressurized water reactor vessels. I hope it will receive Commission approval soon. There is clear and wide-ranging support for this rulemaking from many stakeholders, including the NRC's Advisory Committee on Reactor Safeguards. There are several reasons for this enthusiastic support.

Since the 1980s, when the parameters used to predict the embrittlement characteristics of reactor vessel material were last revised, a substantial amount of reactor vessel surveillance data has been collected. In addition, improved scientific understanding and better analytical models have led to more realistic probabilistic fracture mechanics analyses. The new rule applies risk information to the regulatory requirements in a manner that complements deterministic engineering approaches and supports the traditional defense-in-depth philosophy.

This rule, however, is not just about reducing unnecessary conservatism. The rule appropriately balances the safety scale by imposing additional requirements, such as a requirement that a licensee adopting this voluntary rule must account for uncertainties in the ultrasonic examinations by performing additional analyses of its in-service inspection data to ensure that the flaw distribution within their vessel is consistent with that used to develop the technical bases for this rule. In addition, a licensee must perform more statistically rigorous tests on its available surveillance data to ensure that the embrittlement of its vessel materials is not being underpredicted by the new models.

This rulemaking effort, in my view, exemplifies the best of the NRC staff's dedication to risk-inform our regulations. So my challenge to you – both during your discussions this week, and over the future months and years – is to be a technical resource, a sounding board, and a suggestion box for similar refinements.

Point us to areas where better data have been collected. Help identify regulatory provisions that are excessively and unnecessarily conservative as well as areas where new requirements may be needed. And work with us to understand the technical issues that will allow us to refine and improve our requirements and processes. The better the NRC can appropriately develop and implement risk-informed rulemakings, the more effectively we can do our jobs as regulators.

I have more I could say to you, but since I have covered the three points I planned to make, I feel that in the spirit of being a predictable regulator, I should stop here. Ladies and gentlemen, thank you very much for your invitation to join you today, and for your kind attention.

I will be glad to take some questions.