NRC NEWS

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Remarks of NRC Commissioner Kristine L. Svinicki

"Nuclear Power – Ready, Steady, Go"

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Good morning. I would like to thank Dr. David Hill for his kind introduction. It is a pleasure to be here.

I have sometimes wondered if I possibly might have picked nuclear engineering because within the college of engineering it was the smallest department, and therefore, would provide a dose of familiarity and "smallness" within a big university. The same smallness and bigness issue manifests itself, I have learned, in the nuclear industry as a whole, at least to a certain extent. If you are anything like me, you have found yourself crossing and re-crossing paths with the same people over the course of years. I have interacted with Dr. Hill over the years but Dr. Tom Sanders of Sandia National Labs provides an even more interesting example in my case. On the very first day that I reported to work at the Department of Energy, I was told to bring a suitcase because I was to fly to Sandia to meet with Tom. So now he is the incoming President of ANS and I am here to address you at the winter meeting of the ANS this morning. It is an honor to do so.

The posted theme for this plenary session is "Nuclear Power – Ready, Steady, Go." I've interpreted that to be a reference to what is called "The Nuclear Renaissance" – which we see in the creation of new reactor and plant designs, the filing of applications for new plant licenses, and the general interest in putting new nuclear generation on line in the United States.

Before I begin, though, I should note here that I speak from the perspective of a nuclear regulator. In the federal government, by law the Department of Energy is responsible for promoting the use of nuclear technology and materials, and the NRC – my agency – is responsible for regulating the safe and secure commercial use of nuclear technology and

materials. I should also note that my remarks today are my own personal views, and that they may not represent the collective view of the Commission.

Now, readiness is a challenge, and I'll discuss that first. The NRC has been working for years to be ready should there be a private sector decision to build and operate new power reactors. The NRC has learned many valuable lessons over the last three decades. From a technical standpoint, our licensing and oversight processes have benefited from advances in methodologies such as probabilistic risk assessment, improved engineering practices and analyses, and - of course – from the computing power inherent in over a dozen "Moore's Law" doublings of computer performance.

The NRC has also worked to improve the efficiency of the regulatory process associated with issuing operating licenses.

The fleet of currently operating power reactors were built – more or less – as a succession of one-of-a-kind facilities. There were common elements – their nuclear steam supply systems, for example – and they all used similar hardware, but they all had many significant differences.

We've heard the expression that "the devil's in the details," but it's just as true – and especially for a regulator – that the devil's in the differences.

All the nuclear plants in the current operating fleet were different enough that the NRC had to analyze and review each one practically from scratch, and the operating license reviews had to be done while the plant was under construction, with a public hearing after completion.

In 1989, the NRC began establishing the new combined construction permit and operating license – or COL – application process, which was further refined and updated with a rulemaking last year. The new licensing process – laid out in Title 10 of the Code of Federal Regulation Part 52 – was envisioned as involving three steps: certifying a plant design, obtaining an early site permit (or ESP), and then a COL application pairing those first two.

The intent was that reactor vendors would develop and finalize designs and get them certified by the NRC, while utilities would identify and analyze candidate sites, get them approved by the NRC, and bank them for future use. Utilities would then select a certified design, and apply to build at an already approved site. Since the NRC would already have reviewed both the site and the plant design, the COL reviews could be reduced in scope and there might not be the need for a post-construction hearing.

That hasn't quite happened yet, as none of the COL applications that the NRC has so far received reference both a certified design and an approved early site permit. Some do, though, reference an already certified design and all the others reference a design still undergoing NRC certification review. So, the NRC efforts to get "ready" with Part 52 have helped. As more reactor designs get certified and early site permits are approved, therefore, in concept, the regulatory resources required for each individual COL would be reduced.

Getting "ready" is more than technology and processes, however. It's also people. Trained and experienced people are absolutely essential throughout the nuclear industry, and the NRC is certainly no exception.

The DOE's statistical office – the Energy Information Administration – estimates that the global demand for electric power generation is expected to rise sharply over the next 20 years. In the United States, electricity demand is expected to increase by 50 percent in the next thirty years. If nuclear power were to maintain its current share of the electricity supply in this country, the industry would need a fleet of about 150 nuclear power plants, with an average output of 1,000 megawatts each. To reach that level, that would require building and bringing on line nearly 50 more large, commercial power reactors to add to the 104 that are currently operating.

With median worker ages in the nuclear industry in the upper 40s or older, where will the needed designers, builders, and operators come from? How do we get "ready" with respect to people? This is a challenge for all sectors of the nuclear industry. I don't have to remind this audience how some universities decommissioned their reactors and scaled back or dropped their nuclear engineering departments. We've seen some recent improvements there, but there's no getting back the decommissioned reactors as education, training, and research tools.

In fact, my own alma mater – the University of Michigan – can be considered a representative example. The University's Ford Nuclear Reactor began operations in 1957, one year prior to nuclear engineering reaching department status. In 1988, there were just a handful of us receiving nuclear engineering degrees. This year is the 50th anniversary of Michigan's nuclear engineering department, and the university recently announced that the department enrollment was the highest ever. That's a hopeful sign, and I'll speak more on that in a minute. The Ford Nuclear Reactor, however, was shut down in 2003 and decommissioned.

It's not just been at universities, however, where there have been reductions in facilities and programs. A similar trend has been observed in nuclear components manufacturing. For example, with few exceptions, all the reactor vessels of the current generation of operating U.S. plants were fabricated in the United States. Today, there is only one facility in the world producing the heavy steel forgings needed for the largest reactor vessels: Japan Steel Works. It currently has a three-year backlog. I would think that, in time, other manufacturers will revive the capabilities they once had to produce these components but, for now, the line for these forgings is long, and getting longer. For now, the absence of such domestic facilities means no domestic engineers and craft doing that work, and therefore, no experience being gained now doing it.

I'll give you another example. According to data compiled by the American Society of Mechanical Engineers, the number of ASME Nuclear Certificates held by companies fell worldwide from nearly 600 in 1980, to under 200 in 2007. That decline was due almost entirely to the loss of American-held certificates, as the number of certificates held in other nations remained fairly steady at around 100. Similar to the forgings example I just cited, fewer nuclear certificates means fewer engineers doing nuclear work, which soon means fewer engineers experienced at doing nuclear work.

I said earlier that the increased enrollment in Michigan's nuclear engineering department was a hopeful sign. There are additional indications that things may be turning around in the educational and industrial sectors.

At a public briefing just last month, industry officials told the Commission that some improvements had been made in the area of nuclear infrastructure development during the last year. For example, they stated that the number of U.S. nuclear certificate holders had increased in the last 12 months – reversing the previous steady decline – and now stood at almost 260. Also last month, Northrop Grumman and AREVA announced that they would partner to build a new manufacturing and engineering facility in Newport News, Va. capable of forging even the largest of reactor components. If they stay on schedule, they would break ground in spring of 2009. That facility would be to support what the owners hope will become a significant demand for AREVA's new reactor design – the EPR. Another large facility has been announced by another joint partnership – Westinghouse and the Shaw Power Group – to be built in Louisiana to support the new Westinghouse reactor design – the AP-1000.

Several utility company licensees and architect engineering firms have also begun to address the demographics problem by supporting or even partnering with educational institutions, especially local community colleges, to help assure a steady source of trained personnel. The current count of such institutions, again according to industry representatives testifying before the Commission, is 42 community colleges and, additionally, another 19 state-based workforce development efforts.

The personnel challenges may be even tougher for federal agencies, however, as the Office of Personnel Management projects that, over the next five years, more than half a million federal employees – one-third of the entire workforce – are eligible to retire from government service.

At the NRC, we exceeded our Fiscal Year 2007 goal of an increase of about 200 staff by bringing onboard 441 new employees, for a net gain of 216. Each year, we send staff to approximately 80 recruiting activities at career fairs and conferences across the country. We are helped in our efforts by a recent ranking of the NRC as the "best place to work" in the federal government. In this independent ranking, we were recognized as "best in class" in the following areas: matching our employees' skills with our mission, strategic management, effective leadership, performance-based advancement, training development, support for diversity, work-life balance, and satisfaction of employees under 40. Clearly these are important areas for any agency, lab, or company looking to retain new talent.

Once we hire these new employees, we have to make sure they are ready to do the work. For this purpose, NRC has developed detailed qualification programs in both our operating reactor and new reactor offices, as well as similar programs for our inspectors in the regional offices. These qualification programs provide a structured process for new employees to learn about the NRC and their specific job function (such as project management, technical reviews, or construction inspection) through study activities, training courses, and on-the-job training. At the end of the qualification program, the staff members demonstrate their knowledge at an oral qualification board examination.

We established the Office of New Reactors and have been staffing up – which means our offices are getting a little cramped and we have had to locate some temporary office space – but we are meeting our goals. The NRC used to hire 30-50 new people per year. Now we are hiring a net of 200 people per year over a three-year period. Additionally, we've reached out to recent NRC retirees, bringing many of them back temporarily to help with knowledge transfer.

In summary, the NRC has been working hard to get "ready" by updating our regulatory processes to take advantage of advances in technology, and methodologies, by revising the regulations associated with licensing new plants, and by investing in our staff.

So, briefly, I'd like to say a few words about "Steady."

The resurgence in interest in new nuclear power plants has only been made possible by the sustained safe and reliable performance of the current fleet of operating reactors. We must never lose sight of that fact. The NRC considers the oversight of the 104 currently licensed, operating reactors to be – by far – our most important responsibility. The great majority of our resources – inspections, reviews, and oversight – remain focused on those facilities. We maintain resident inspector staffs at each operating reactor site, and otherwise continuously monitor licensee performance, and we do so vigilantly.

Just as a chain is only as strong as its weakest link, so, too, is the reputation and credibility of the nuclear industry dependent upon the continued safe operation of every one of its plants. The nuclear industry is now, and may always remain, just one accident away from retrenchment. The watchword for all – operators and regulators, alike – must be "Steady": steady operation, steady regulation, steady progress, and steady oversight.

As for "Go", the NRC has approved four certified designs and three early site permits. Under review are another early site permit, three more reactor designs, and 17 combined construction permit and operating licenses. The NRC is making all possible preparations to give each of those submittals both a timely and technically rigorous review.

The rest of the "Go" part is up to you, and the rest of the nuclear industry. Thank you.