



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

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**Prepared Remarks by Dale E. Klein  
Chairman  
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at the  
Third Annual Platts Nuclear Energy Conference**

**“Opportunities for Growth and Investment in North America”  
Washington, D.C.**

**February 8, 2007**

Good morning. I am happy to be here with you, to discuss such an optimistic subject as “opportunities for growth and investment in North America” for the nuclear industry.

Let me begin by noting that I am a regulator, and I am prohibited by the law that created the NRC from engaging in any activity that promotes nuclear energy, including discussion of opportunities. So I will leave the enumeration of opportunities to other speakers.

Let me start out, though, by indulging in a bit of optimism. I do not believe the NRC to be a bottleneck in the process.

I say that at least in part because of my vision for the NRC. My vision is that the NRC will be a strong regulator. We will hold our licensees accountable, we will articulate our requirements clearly, we will be demanding and we will be responsive to their legitimate needs and concerns. All stakeholders – the nuclear industry, the financial community, and especially the public – must be made aware of the status and progress of issues of interest to them to the maximum extent we can provide the information.

In short, the NRC will provide, to the maximum extent possible, the regulatory stability needed in the uncertain first days of a rapidly expanding, technologically complex and capital-intensive industrial sector.

As you are aware, the issue of whether the NRC would receive the necessary funding to handle the expanded workload ahead has been in doubt. I am a believer that all good things come to those

who wait – provided they work feverishly while they’re waiting. My fellow Commissioners, the NRC staff and I have been working hard to communicate to the Congress the importance of the work that the NRC is and will be performing.

From all indications the Congress agrees, and is acting to approve the funding for us to move ahead with all needed activities. The FY2008 budget, released earlier this week, will allow that high level of activity to continue. We are confident that both the FY2007 and 2008 funding will allow the NRC to accommodate all planned early site permitting, advanced design certification and combined operating license applications we receive.

In preparation for our expanded workload, the NRC already has increased staff by 371 positions in FY2006, and will add about 600 more positions by the end of next year. Of course, the net increase will be somewhat lower because, like most Federal agencies – and the nuclear industry – we have a graying workforce, and are losing key employees to retirement.

We also have made the necessary organizational changes to handle new reactor applications. Our recently established Office of New Reactors is up and running, as is a new construction inspection program based out of our Region 2 Office in Atlanta.

We’re still looking at ways to reduce the review time required for early site permits and combined operating licenses, with no compromise on safety. That is not an unrealistic goal, if industry does its job at the beginning of the licensing process.

If the industry does its job – that’s the key. I have told every industry member I have seen since I took office, and I repeat now to the industry representatives in this audience, it’s a plain fact that a quality application – Combined Operating License, license renewal, design certification or anything else – takes less time to review than one that’s lacking. Show me quality and clarity and the NRC should show you timeliness.

Rather than regulatory delays, I believe it is much more likely that the pinch points in the expansion of U.S. nuclear energy will be the following factors:

- It may be difficult for the prospective owners and operators of nuclear plants to secure the high quality components and workforce they will need to construct the plants;

- Owners may not be able to hire enough competent personnel to run them;

- And connecting as many as 30 new nuclear plants to the Nation’s grid will be an intricate and challenging process.

The nuclear manufacturing infrastructure is a problem not just for the U.S., but throughout the world. The U.S. is just planning to build new reactors, but the rest of the world is actually building them – and never stopped building them during the 30 years that the U.S. nuclear manufacturing capability has withered on the vine.

As we confront the prospect of a major nuclear expansion, the companies that will make those multi-billion-dollar orders must make critically important decisions as to where to buy their systems and components. Clearly, much of the technological capability to supply their needs now rests outside

the United States. And many of the world's nuclear manufacturers are now operating at capacity – right now, the lead time for delivery of reactor vessels is upwards of four years, and other key components have even longer backlogs.

In the face of those long lead times, nuclear projects have two choices – get in line and face costly completion delays, or scour the globe for available components and materials.

The NRC will have in place the rigorous inspection programs needed to ensure the quality and authenticity of the components that go into plants built in the United States. However, we cannot ensure the quality of the materials used in other countries, and if use of substandard materials should lead to a high-profile event anywhere in the world, the nuclear industry worldwide would suffer.

Practically speaking, also, it will take longer for NRC inspectors to approve foreign-made components. In terms of the logistics of quality control and safety inspections, therefore, it would be advantageous to have as much of the content originate in the U.S. as possible. It is both easier and faster for our inspectors to visit a manufacturing plant in, say, Indiana than in France – or China.

Some of that is already happening. For instance, Areva, one of the world's largest nuclear manufacturers, based in France but with roots in the U.S., last year signed an agreement with BWXT, one of the last U.S. nuclear manufacturers, to produce nuclear components in the U.S. I visited the BWXT plant in Indiana late last year, and I was highly encouraged by the capabilities of the facility, and the plans for expansion.

It would be good to see more of the same. Whatever this country does regarding nuclear energy, it is clear that it is growing elsewhere in the world. The nation would be well served if our own energy needs serve as a springboard to rebuild U.S. technology and manufacturing capabilities to something approaching the global leadership the nation once enjoyed, contributing to foreign markets as well as supporting our own.

As complex as the global nuclear manufacturing system is, it is far from the only logistical knot facing potential nuclear projects. Another is grid reliability. The NRC tends to be fixated on the issue of whether a plant can operate safely, but of course, the basic function of the plant is to produce electricity, and so we must also involve ourselves in the issue of the impact of a huge new electricity generating facility on the grid.

My fellow NRC commissioners and I met recently with our counterparts from the Federal Energy Regulatory Commission. One of the most personally surprising pieces of information I took away from the meeting was the fact that it may take as long to site, permit and build a transmission line for a new nuclear plant as to site, license and build the plant itself.

It was clear from our meeting – also attended by a representative from the North-American Electric Reliability Corporation – that a stable and reliable grid is important to nuclear safety, and that the 30,000 megawatts of new nuclear plants that might come out of the expected new license applications will have a profound impact on the grid.

We all agreed that it is vital that the electric power industry aggressively pursue integrated planning for both generation and transmission as they consider these new plants. This would permit the transmission infrastructure to be upgraded as necessary, so that there are no surprises – or blackouts.

The NRC will continue working closely with FERC at the staff level, and the commissioners will meet periodically. You can take it as either good news or bad news, but the regulators are talking to one another, and – at least speaking for FERC and NRC – we are determined to resolve issues where our jurisdictions overlap and ensure that new projects do what they are intended to do – provide a safe and reliable supply of electricity to our nation.

Now let me move on to the other potential challenge to “opportunities for growth” in the nuclear industry – the capital needed to operate nuclear plants – not financial, but human capital. I have often expressed my concerns about the nuclear industry’s capability to muster the workforce needed to operate nuclear plants. I have yet to hear any sound answers to these concerns, so I continue to believe that this is a potentially enormous problem.

I ask this audience the same questions I have asked others: Where are we going to get the educated and skilled workers to run the nuclear plants of the future? Where are they being educated? Where are they being trained?

A 2001 nuclear industry survey estimated that demand for nuclear engineers through the end of the decade would be about 150 percent of supply and the need for radiation protection professionals would be about 160 percent of the supply. That survey predated the recent movement toward new reactor planning, and I’m told the next industry survey, due out later this year, will show an even more acute shortage of candidates to fill the waiting jobs.

And that’s just the nuclear industry. I have already mentioned the NRC’s needs. DOE, 10 national laboratories, a number of other government agencies, the armed forces, state and local governments and health care professions will be seeking nuclear science and engineering graduates – at the very least to replace retirees and in some instances to meet new and expanded programmatic needs.

And what about the supply to meet this demand? Well, the good news is that undergraduate enrollment is growing rapidly. Department of Energy surveys show that undergraduate enrollment at 23 reporting institutions in nuclear engineering, health physics, radiological and related fields nationwide has more than doubled to about 1500 in 2005 and that graduate enrollment has risen above 1,000.

The bad news is, according to a recent American Nuclear Society report, that number will not be sufficient. ANS notes in a recent report that it found “...nearly uniform anecdotal evidence that the current production rate for NSE [Nuclear Science and Engineering] graduates is not sufficient to meet demand. For example, one division of one of the national laboratories has recently (unsuccessfully) sought 100 nuclear scientists and engineers, and Westinghouse, General Electric, AREVA and the NRC are attempting to hire hundreds of engineers per year, many of them nuclear, from too small a pool of candidates.”

I can tell you that the NRC has worked hard to develop a successful hiring strategy, and it helps our recruiting that we recently finished at or near the top in several categories rating the best places to work in government. We have been successful in hiring outstanding candidates so far, and expect to continue to pursue bright scientists and engineers for the next several years.

I can't speak for the efforts of other prospective employers, but it seems to me that none of our interests – not to mention the national interest – is going to be well served if we spend our time and money competing for a limited number of candidates. We must focus on an intensive nationwide effort to increase the talent pool.

Some of that is being done. The ANS report notes that several federal agencies either have established or are in the process of establishing nuclear science and engineering fellowships and/or research programs. The Department of Labor has several grant programs to channel new workers to high-growth industries, including nuclear energy – most notably a \$125 million grant to 70 community colleges. And the National Academy for Nuclear Training, run by the Institute of Nuclear Power Operations provides \$850,000 per year in scholarships – a total of \$23 million since 1980.

But we should be doing even more as a nation, especially the private sector. I would urge the nuclear industry to increase its funding of university nuclear research – and do it soon. We now have 25 four-year university nuclear engineering programs in this country – down from 38 in the 1970s. The more the industry can do to augment funding for these university programs, the more likely they are to survive in the competitive academic world. We simply cannot afford to lose any more.

Beyond the existing university programs, I believe that a major industry effort is necessary to address every level of education in this country, starting with a commitment to fostering interest in science and engineering at the elementary and middle school level.

Look at it this way – the nuclear industry will be spending billions on hardware. It would be foolhardy not to spend the millions necessary to develop the human capital to operate all that expensive machinery efficiently.

I believe that this is an issue to be addressed – urgently – at the CEO level at every entity in both the public and private sectors with any involvement in the nuclear industry.

In conclusion, let me say that I am personally excited by the possibilities ahead. I have spent my career in the nuclear field, and it is gratifying to see the technology once again fulfilling its great promise.

The Nuclear Regulatory Commission has a very important and very positive role to play. We are gearing up for a vastly increased workload, and I am convinced we can discharge our obligation to provide rigorous regulatory scrutiny of the new reactor applications and associated duties without unnecessary delays.

My fellow Commissioners and I assure you that the NRC will do the hard work of creating the needed framework of regulatory stability. We, in turn, must be assured that the manufacturers, builders and operators of the coming plants are prepared to meet their obligations to the public. If we all do our jobs, the realities that challenge the nuclear industry's ability to seize the opportunities

before it, can be satisfactorily addressed, and nuclear energy will play a valuable role in our nation's energy future.

Thank you.