



NRC NEWS

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**Prepared Remarks
by Chairman Dale Klein**

**at the
2006 Annual Banquet of
The National Organization of Test, Research and Training Reactors
Austin, Texas**

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Good evening. I'm happy to be here tonight, even though I am appearing under false pretenses. When I was invited, I was Assistant to the Secretary of Defense. Since then, I have left that job to accept my current position as Chairman of the Nuclear Regulatory Commission. I hope you're not disappointed. I do note, though, that when I looked at the conference program a couple of weeks ago, I was still listed under my former title at Defense – so maybe my job change still comes as a surprise to some of you.

It's good to be back here in Austin among so many familiar faces, although as head of the agency that regulates your reactors, I guess I'm going to have to forget I know you for the next five years. That's going to be easier in some instances than in others.

I have so many fond memories of my time here – not the least of them being supervising the construction of our own UT test reactor. I had just a tinge of disappointment that the UT reactor didn't get any air time last year in the ABC television special, but the fact that the A&M reactor was featured so prominently made up for it a bit.

When I agreed to speak to this group, given my former position, I thought that my main topic would be security – and since my portfolio as NRC Chairman also includes TRTR security, I will address that issue.

But I would also like to speak to you tonight about the vital role university nuclear education programs must play in the energy future of the United States. The U.S. nuclear industry has ambitious plans to build dozens of new nuclear plants over the next two decades. However, at current enrollment levels, the nation's university training grounds are not producing anywhere near the numbers of trained and educated nuclear professionals that will be needed to staff those plants. This is a serious question

that must be addressed at the highest levels of government and industry, and I intend to make workforce development a major theme of my tenure at the NRC.

But before I get to future nuclear workforce needs, and the jobs that will be out there for university nuclear program graduates, let's talk about security. Two dates loom large in the annals of TRTR security: September 11, 2001, and October 13, 2005. The former date is familiar to you, and perhaps the latter date is, as well. October 13, 2005 is the day on which the ABC television network devoted the entire hour of its Primetime Live program to examining research reactor security.

You may have seen the show. It was dramatic television – groups of attractive young journalism interns attempting to penetrate security at campus reactors around the country. It was complete with covert midnight visits, doors propped open with books and flirtatious behavior directed at university reactor personnel to get them to bend rules. During the show, ABC alleged that doors were left open or unchecked, guards were either absent or asleep, backpacks and packages were permitted in areas adjacent to reactors, individuals arriving unannounced were allowed tours and even to bring cameras inside, among other transgressions. Throughout the show, a member of a nuclear watchdog group repeatedly deplored the lapses and issued dire warnings of vulnerability to terrorists.

The NRC thoroughly investigated the ABC report and discovered one potential violation. Let me repeat that: one potential violation. We have addressed the one potential violation in accordance with our inspection and enforcement policy.

All licensees have responded to specific claims made in the program and their evaluations are consistent with our own – specifically that the ABC interns were only provided tours as allowed by preestablished procedures, which bags were only left in allowed areas or were searched, alarm systems were used as required and that surveillance by campus police and facility personnel were as required.

That is pretty much as we expected. You and I – as former head of a research and test reactor program myself – know that TRTR facilities have been covered by NRC security regulations for decades. After the September 11 attacks, the NRC advised all TRTR licensees to go on heightened levels of alert and licensees have since implemented additional security precautions.

Since 2001 many TRTR licensees have committed to taking stronger action to protect against radiological sabotage or theft, and those measures in many instances have been formalized by Confirmatory Action Letters from the NRC and verified through onsite inspections and evaluations.

The reality of the situation is that TRTR installations pose a relatively low risk to public health and safety, either from radiation or the theft of nuclear material. However, the ABC program and the reaction to it should make it clear that in the post-September 11 world we must address the perception of threat as well as the reality. I don't think the situation requires any further regulation, but I do think us -- the NRC and the licensees -- all ought to work together more frequently to develop and exchange good security practices that you can implement on a voluntary basis.

I am aware that increased security costs money, and you should by no means get the idea that either the NRC or any other agency of government wants to unnecessarily add to your burdens. Certainly, no one is more aware than I of the continuing struggle to keep your reactors operating and

your programs viable. During my time here in Austin, I fought constantly against budget erosion and declining interest in the program.

As we continue to interact with the Department of Homeland Security and Department of Energy, you may be assured that the NRC will be supportive of requests from research and test reactors for Federal assistance for voluntary security upgrades.

But government support must go far beyond supporting security enhancements. Nuclear power in the U.S. is thriving, and its future is limited only by two factors: our nuclear manufacturing and construction capabilities and our ability to staff new plants if and when they are built.

As you know, 103 operating nuclear plants currently supply about 20 percent of the electricity in the U.S. That number will likely increase to 104 within the next two years, when a long-shuttered Browns Ferry unit is restarted. The Browns Ferry restart underscores the change now under way in the nuclear power industry in the U.S. Nuclear plants, once albatrosses around the necks of their owners, are now among their most valued assets. Half the nation's nuclear plants already either have had their licenses extended for another 20 years, or are under NRC review for extension. Most of the rest are expected to apply in coming years.

In addition, at last count 13 companies – either individuals or consortia – have announced plans to apply to the NRC for 19 combined operating licenses, amounting to a total of at least 27 reactors. That number may be joined by several more projects. A question looming ever larger is, where will the industry get the trained and educated workforce to run those new plants? However, the problem is a broader one than just staffing new plants. Both the nuclear industry and government are going to have difficulty even maintaining the workforce at their current facilities.

A nuclear industry survey shows that nearly half of current nuclear industry workers are more than 47 years old, and that nuclear energy companies could lose as many as 23,000 workers over the next five years – about 40 percent of the total jobs in the sector. That is a tremendous brain drain. How do we transfer the knowledge to their replacements – who may form the cadre of workers as the next generation of plants starts up?

At the same time, the key suppliers to the industry – the architect/engineering firms, fuel suppliers and reactor manufacturers, anticipate that 32 percent of their workers will be eligible to retire within the next three years. They clearly must be replaced and their numbers augmented if the nation is to restore its manufacturing capability sufficiently to supply the components for and build the new plants.

To focus on just two of the many categories of scientific and engineering professionals, a 2001 industry survey estimated that demand for nuclear engineers through the end of the decade would be about 150 percent of supply. The need for radiation protection professionals would outstrip supply by about 160 percent. That survey predated the recent movement toward new reactor planning, so the shortage of candidates to fill waiting jobs can only have grown more acute since then – even though Department of Energy surveys show that undergraduate enrollment at 23 reporting institutions in nuclear engineering, health physics, radiological and related fields nationwide has increased from 668 in 2001 to 1,520 last year and that graduate enrollment has risen above 1,000.

I might add that the government also will be competing for the same nuclear-related skills. The NRC alone will hire between 300 and 400 professionals a year through 2008 to handle the increased workload of new plant applications and other business, and to replace retirees. The U.S. Department of Energy, national laboratories, NASA and other government agencies also have personnel needs. And I would be willing to speculate that the increased demand for nuclear science and engineering professionals will extend to the faculties and staff of TRTR programs.

Successfully addressing these needs would seem to require a reversal in a long-term decline that has been distressing to follow. The number of four-year nuclear engineering programs now stands at about 25, nationwide – down from 38 in the 1970s. Any further closures – such as is now being contemplated at the University of Cincinnati will exacerbate the situation.

The nuclear industry and the government are working on many fronts to address the problem, and there are many hopeful signs. The National Academy for Nuclear Training, run by the Institute for Nuclear Power Operations, for instance, provides \$850,000 per year in scholarships – a total of \$22 million since 1980.

Both the DOE and the NRC are authorized by last year's Energy Policy Act to award fellowships and scholarships. The Department of Energy awarded grants totaling \$23.5 million in 2005 and is awarding \$27 million in FY 2006 to develop specialists in nuclear power generation, medicine and scientific research. Unfortunately, the DOE FY2007 budget request for the program was dropped to \$3 million for FY 2007, but members of Congress have had a different view, and it is likely that the FY2007 number will be restored to the previous year's level. In addition, the DOE last month announced that it will award \$510,000 in fellowships to 12 graduate students who are studying the nuclear fuel cycle.

The NRC doesn't have anywhere near the budget DOE does, but we do have research needs, and we are directing a total of \$5.8 million to research activities at universities. I would anticipate that our research needs will increase in the future in areas such as reactor component aging, risk-informed regulations, advanced reactors and new technology and security assessments.

In addition to funding for research, NRC is also providing funding to directly address the decline in university programs and in program attendance. Beginning in FY 2007, NRC will provide \$4.8 million to support the development and expansion of university nuclear safety, security and environmental protection programs. An additional \$375,000 is designated for undergraduate scholarships and graduate fellowships to support students who are pursuing education in science and engineering disciplines.

Both the nuclear industry and the government have a number of other programs under way – including a \$125 million grant from the U.S. Department of Labor to 70 community colleges to help channel new workers to high-growth industries, including nuclear energy.

All of this may not be enough, however. I recently attended two nuclear industry gatherings sponsored, respectively, by the Nuclear Energy Institute and INPO. I brought up the issue of workforce development with both groups, and warned them that current efforts – and this is a direct quote – “are just nibbling around the edges of this enormous challenge.”

“I would suggest to you,” I told these groups, “that a major industry effort is necessary, and that it must address every level of education in this country, starting with a commitment to fostering interest in science and engineering of elementary and middle school children.”

I believe that we must have a concentration of effort on women and minorities, who now represent the majority of potential students but remain less than a quarter of the students currently enrolled in nuclear-related undergraduate programs. When I arrived at the NRC, I was pleased to note the diversity of the professional workforce. That is a trend I intend to continue and encourage.

Scholarships, training centers and recruitment efforts are commendable ways to steer the technically-inclined toward careers in the nuclear field. So are internship programs with meaningful work. And once they are on board, mentoring programs will help to augment training and generational knowledge transfer.

However, the real challenge – and the real solution – is to increase the talent pool, and every segment of the nuclear industry needs to focus on this goal. It may be desirable from the point of view of a university TRTR program to have multiple employers waving money and benefits at each one of your graduates, but ultimately it will not be good. The demand is there, and a goal must be to bring supply and demand toward equilibrium.

As I have told the nuclear groups I have addressed, this is an issue that should 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 summary, I would say that you in the TRTR community have a problem – but it is a good problem. For the foreseeable future, demand for the graduates of your programs and the fruits of your research should exceed supply.

The formula is a simple one, known to faculty everywhere: University administrators value programs that bring in research dollars and students, research dollars flow toward expanding technology segments and students gravitate toward careers that promise fulfillment and financial reward. Follow the money, and success will be yours.

As a regulator, let me first say that I have stood in your shoes, and I understand your problems and concerns. That can be both good and bad for you. My understanding is accompanied by an idea of the high standards to which you should be held. What I can basically offer you is my vision of the NRC as a strong regulator, who will hold all licensees – power reactors and TRTRs alike – accountable. My vision also is that the NRC will articulate its requirements clearly, and that in addition to being demanding, we will be responsive to your legitimate needs and concerns.

But as one who labored through some lean years on campus, I am somewhat envious, but overall, delighted at the prospect of good times ahead for the TRTR community – even for Texas A&M. I look forward to working with all of you over the next few years.

Thank you, and now I’d be pleased to respond to your questions.