

NRC Commissioner Merrifield: You ain't seen nothin' yet

The Honorable Jeffrey S. Merrifield, commissioner of the U.S. Nuclear Regulatory Commission, made the following presentation at the 2007 Regulatory Information Conference, held March 13–15, in Rockville, Md.

As many of you already know, I made a decision last October that I would not seek a third term as a commissioner of the Nuclear Regulatory Commission. As a result, this will be my ninth and final Regulatory Information Conference [RIC] as a commissioner of the NRC.

And what a time it has been. I believe that I have given the NRC staff many challenges, and they have more than met my expectations. When I came to the commission in October of 1998, we had not issued a single license renewal for any one of our nation's 104-reactor fleet. Today, we have renewed the licenses of close to 50 reactors, and absent some unforeseen circumstance, it appears that within a handful of years, all 104 will either be allowed to continue to operate for 60 years or be in various stages of review.

Despite the fact that we had issued three design certifications by 1999, I was still very much [out] on a limb at the 2001 RIC when I postulated that "new nuclear plant orders may become a reality in the near future." During the late 1960s, the nation's utilities rapidly increased their orders for nuclear power stations, participating in what Philip Sporn, past president of American Electric Power Service Corporation, described in 1967 as the "great bandwagon market." Today, we have the potential for 32 new reactors at 23 sites. If that is not a second bandwagon, I don't know what is.

I asked the staff to consider new ways to approach decommissioning, and they have made great strides. Consequently, we have a much better handle on our legacy waste issues than we did nine years ago. The lessons that we and our licensees have learned in this process will be of tremendous assistance when the as-yet-unbuilt reactors prepare for decommissioning late in the 21st century.

Our legal process, which was under some stress when I first got here, is far more disciplined under our new [10 CFR] Part 2 [Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders] procedures. Possessing a cadre of new, well-trained judges, we are far more prepared to handle new license applications than we were just a few short years ago. And with the new alternative dispute resolution process that I championed, I believe

that the NRC will have better outcomes and less litigation in our enforcement process.

We are a more risk-informed agency. The reactor oversight process that we deployed just a year after my arrival has had a striking success in enhancing our oversight of the nation's reactors, yet in a manner that is more open, less contentious, and less burdensome. The issue of fire protection, which has been a nettlesome issue for this agency for decades, will be put to bed through the deployment of the risk-informed fire protection program—NFPA 805.

Our international partnerships are as strong as they have ever been. Whether it is the relationships with our neighbors to the north and south or our allies across the Atlantic and Pacific, the multinational efforts that we have enhanced during my time on this commission make us a better and more informed regulator. Through our partnership with the International Atomic Energy Agency, the world's nuclear fleet is stronger and safer than it was just a mere decade ago.

In a world where global terrorism is a reality, we have made tremendous strides in understanding better than ever before the real safety and security risks associated with the materials and facilities we regulate. The nuclear fleet we oversee was the most well-defended element of the civilian infrastructure prior to the terrible events of September 11, 2001, and it remains so today.

Finally, I am proud of how this agency has grown in its ability to communicate. Whether it is meeting with the public, welcoming the world through our Web site, or engaging in our daily dialog with the media, we are less reluctant and more articulate in our ability to communicate about who we are and what we do. Having led the NRC Communications Task Force some years ago, I am proud of the work that this agency has accomplished in spreading the word about what we do to protect people and the environment.

These have been real measurable achievements that have transformed this agency and its reputation. It was the work of a highly talented and motivated staff, and a series of commissioners who have dedicated themselves, one and all, to doing what they thought best for public health and safety. While there is much left to be done—[10 CFR] Part 26 [Fitness for Duty Programs] being one that I would like to finish before I leave—I would like to turn my attention today to what I believe are some of the more significant challenges that lie ahead for my successors on this commission.

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New plant orders

One of the clear mantras that we have here at the NRC is that we are not supposed to be promoters of nuclear power. I have worked hard to maintain this position as a commissioner, and I don't intend to do anything different today. However, the environment in which we find ourselves is changing. The issues of global warming and the role that nuclear power can play in addressing this significant environmental challenge are becoming increasingly intertwined. Today, global warming is viewed as the number one environmental issue around the world. Yet, while well-reasoned scientists may debate its origins and causes, no

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matter where you travel around the globe, there is general consensus that we have a problem and we need to do something about it.

Clearly, conservation must play a major role in limiting human carbon output. While alternative energy sources such as wind power and solar power also have a role to play, the fact remains that as far as large baseload generating capacity is concerned, nuclear power is the largest carbon-friendly source that is technologically deployable at the current time. I will not comment on whether that is a good or bad thing, but it is a fact.

Many of my Republican brethren may not like to hear me say this, but I believe that it is inevitable that our government will act to address global warming by enacting either a carbon tax or a cap-and-trade emissions program. Either way, the concurrent result is that nuclear generating assets will become more attractive from both an economic and environmental point of view. One way or another, we will have new nuclear plant orders in this country.

I believe that in the next 20 years, assuming continued safe operation, we could at least double the number of nuclear power plants we have in this country. If I am correct, there is a lot this agency will need to do to prepare.

Over the course of the last four months, I have led an NRC task force [composed] of 10 senior managers and staff in this agency who have been looking at how we can be more efficient in our combined operating license review process. While I do not intend to go into detail regarding the results of this task force, there are three areas I would like to touch on as it relates to new plant orders.

First, having reviewed our programs, it seems clear to me that our agency has been extremely diligent in meeting the requirements of the National Environmental Policy Act (NEPA). Like many other agencies, the environmental impact statements associated with new reactor orders have grown to the size of a Manhattan phone book and leave literally no stone unturned. In contrast to Council of Environmental Quality regulations, which recommend that most environmental impact statements be fewer than 150 pages, our recently published environmental impact statements for early site permits and uranium enrichment facilities have

been over 1000 pages. That is not to ridicule or criticize our environmental staff, who I believe have worked tirelessly to ensure that the environment is protected in what we do. However, I believe the NEPA process we have engendered is far too time-intensive, too focused on potential litigation, and goes far beyond what Congress expected or required under NEPA. While our task force will make specific recommendations, I believe the commission will need to act to bring greater timeliness and efficiency into our environmental review process.

Second, I believe that our mandatory hearing process is broken. While the Atomic Safety and Licensing Board (ASLB) has made a good-faith effort to create a mandatory hearing process, I believe that the scope and depth of their sufficiency review goes far, far beyond what Congress expected when this requirement was first adopted in 1954. Given the openness of our process in this day and age, I believe Congress should repeal the requirement for a mandatory hearing. Absent this change, the commission should take direct responsibility for these reviews. Using the recent Browns Ferry-1 restart meeting as a model, I believe the requirements for a mandatory hearing could be fulfilled by a single three- to four-hour meeting of the commission.

Third, while our staff has made significant progress in creating a detailed technical review process for combined operating license applications, the COL technical review process remains too long and too cumbersome. While it is the obligation of our licensees to craft high-quality applications, we need to add discipline to the process to ask penetrating and detailed questions in an efficient and timely way. I believe that after the first handful of COLs are issued, we should have a target of a 24- to 26-month review for an application—beginning to end—including the hearing process. This will require discipline by our staff, efficient environmental and safety reviews, rigorous adherence to hearing timelines by the ASLB, and most important, strong commission leadership.

License renewal process

Beyond our reactor oversight process, [license renewal] is the most important and successful program that the commission has overseen during my time here on the commission. While the first license renewal applications took the NRC staff over 36 months to complete, more recently we have been averaging these reviews in about 22 months, if there is no hearing. I believe this is a notable achievement, and a testament to the discipline and efficiency that our staff and senior managers have invested in this program.

Now that we have completed the 20-year license extension of almost half of our current fleet, I believe we need to begin the process of fully understanding what it would take to allow a further round of 20-year license extensions.

While we already have preliminary information from our Office of Regulatory Research that the pressure vessels of the existing fleet can likely be safely utilized for 80 years, we need to have a more detailed understanding of what it would take to conduct a further extension. To what extent would buried piping or cabling need to be replaced? Would changes in instrumentation and control equipment be justified or needed? Would replacement of emergency diesel generators be prudent? Early answers to these questions could have a significant impact on the investment decisions made by our licensees.

One of the major outcomes of our license renewal program is that it has created a strong incentive for many billions of dollars in investments for items such as new vessel heads, steam generators, pressurizers, injection pumps, and other major capital improvements. Long-term financing has made it much more viable for utilities to justify major upgrades and improvements in these units. A further 20-year license extension would provoke the same result.

While it may make economic sense to relicense all of the plants in our existing fleet, we need to have a better understanding of the

technical merits of this issue. In my view, the vast majority of nuclear power plants in the United States could be serious candidates for license extension for up to 80 years of operation, and I believe the NRC must prepare itself to consider that question.

High-level waste

It is most unfortunate the amount of time and money this nation has invested in finding a final repository for used fuel. I have to say I am somewhat tired of hearing people say that we haven't found a "solution" to this problem. Clearly, we know how to reprocess spent fuel, as we invented that process here in the United States as part of the Manhattan Project. Clearly, we know how to dispose of the used fuel in a repository. Indeed, given the time and money we have spent studying Yucca Mountain, I think this country has a pretty darn good idea how used fuel will react over a very long period of time.

The fact is that we have a political issue. Fair or not, in 1987 Congress voted to hand the hot potato to Nevada, and the state has been fighting tooth and nail against a fuel repository ever since. As a commissioner, I have not been given one fact that would lead me to the conclusion that Yucca Mountain could not be licensed as a repository for spent fuel. But, since I will be long gone from here when the final decision is made, my views are academic at this point.

One area we need to change course [in] is management. DOE does an outstanding job overseeing the stewardship of our nation's nuclear stockpile, and our national labs take a back seat to no one in their pursuit of science and technical breakthroughs. However, it was a terrible mistake to saddle the Department of Energy with the Yucca Mountain Project. What this effort needed was sound project management focused on meeting specific timetables and deliverables in an atmosphere more insulated from shifting political winds. This is something that DOE simply is not good at. I agree with a point that Commissioner Ed McGaffigan made recently: We need to follow the course of our counterparts in Sweden and Finland and create a private/public partnership to bring this issue to a final resolution.

What is important to remember about this used fuel is the matter of time. The spent fuel storage cask technology we have deployed at 28 of our 65 nuclear sites around the country is sufficient to hold this spent fuel safely in excess of 100 years. To those who say new plants can't be built without "solving" the spent fuel storage problem, I say "hogwash." Whether it is new plants or old, we can safely store the fuel at existing or new sites throughout the lifetime of both current and future nuclear units. This will give our nation sufficient time to resolve whether we will store spent fuel in Yucca Mountain, reprocess the fuel and dispose of the remaining high-level waste, or identify some new repository in the future. Time is indeed on our side.

International partnerships

I have been fortunate to visit 36 countries as a commissioner of the NRC, including 30 of the 31 countries that operate nuclear plants. I have seen firsthand the impact that our agency and our partners at IAEA have had in improving the state of nuclear regulation worldwide. I was pleased to have represented our country at the last Convention on Nuclear Safety, and it was with great pride that I was able to explain the steps that the NRC has taken to protect the use of the atom in our country.

A few things have become quite evident to me, given the interactions I have had over the last nine years. First, there is a great desire for our international partners to learn from what we have done here at the NRC, and increasingly, our more experienced partners have more to offer us in return. Second, nuclear regulators around the world, particularly in Eastern Europe, have made great strides in improving their capabilities over the last 10 years. Third, there is a burgeoning number of countries that have announced that they are interested in exploring the use of nuclear

power.

Thailand, Vietnam, Malaysia, Indonesia, Burma, Venezuela, Chile, Poland, Estonia, Italy, Belarus, Turkey, Egypt, Israel, Namibia, Nigeria, Jordan, Qatar, and Morocco are among the countries that have announced that they may want to join the nuclear power family. IAEA has taken steps to reach out to many of these countries to help provide credible regulatory bodies, and I applaud the leadership of Mohamed ElBaradei for this effort. However, in my personal opinion, our country needs to do more. The NRC must take an increased role in promoting strengthened nuclear regulators worldwide.

President Dwight Eisenhower launched the Atoms for Peace program in 1953 to foster increased cooperation among countries around the world through the peaceful use of the atom. The burgeoning interest in nuclear power today is a direct outgrowth of Eisenhower's vision. As such, our country has a moral obligation to lend a helping hand to regulators in those countries that seek the benefits of this technology. In my view, Congress should provide the NRC with additional funding off the fee base to allow this agency to take a more proactive role in assisting our regulatory counterparts worldwide. Nuclear safety should not take short shrift in the foreign aid our country provides, and I hope future commissioners and our counterparts in the State Department will see the wisdom of this view.

Conclusion

As I stated in the beginning, it has been an exciting time to be an NRC commissioner over the last nine years. As a result of the effort that my fellow commissioners and I have made over this period of time, we have created an institution that is second to none in its pursuit of excellence in the field of nuclear regulation. We have enjoyed unprecedented improvement in the operation of the plants we oversee, and with the significant achievement we have made in license renewal, our nation will enjoy the use of this carbon-friendly power generation for decades to come.

Today, we are confronted with an extraordinary level of interest in building new plants, which I believe could result in a doubling of nuclear power generation in the United States over the next 20 years. Combined with this effort, the agency will have its

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work cut out for it to prepare to deal with the potential for an 80-year license term, as well as the next steps on the long road toward resolving the spent fuel issue. When I leave the commission in June, it will be with the satisfaction that we have accomplished much as an agency, and I believe that I and the commissioners I have served with will have laid a very solid foundation for the future of this agency and for the safe and peaceful use of the atom in our country. While the face of the commission will change, I am very proud of my service and contribution to this agency, and hope that it will do as well in the future as it has done over the last nine years. **NN**