

KEEP CALM AND CARRY ON WITH NUCLEAR POWER, PART II

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A little over two weeks after the 2011 accident at the Fukushima Daiichi nuclear power plant in Japan, I wrote a column for *The Hill*, “**Keep calm and carry on with nuclear power,**” in which I stated:

Now is not the time for rash judgments about America’s nuclear power stations, which produce one-fifth of all electricity. Give the NRC [Nuclear Regulatory Commission] time to study the still unfolding events, inspect capabilities at U.S. plants and develop commonsense, yet protective measures that will maintain U.S. leadership in safe nuclear energy technology and operation.

Now, there are some who oppose nuclear power and claim that nothing has been done by the NRC and that the nuclear industry is dragging its feet on responding to the events at Fukushima. That simply isn’t true.

To its credit, the NRC and the U.S. nuclear industry have followed the very playbook that I urged in my column. After a series of inspections, hearings, staff inquiries, requests for additional information, and significant public input, the NRC issued a series of orders to U.S. nuclear energy companies that address the most significant findings associated with the accident.

The first NRC order required the instillation of a hardened storage building at each nuclear plant containing backup generators and emergency pumps (so-called FLEX equipment) that could be used to respond to the type of events that were encountered as a result of the tsunami hitting Fukushima.

The second order required nuclear plant operators to install spent fuel pool instrumentation at each reactor so as to avoid the guesswork that occurred at Daiichi, where there was no way of knowing whether there was water covering the spent fuel stored in the plant.

The third order imposed the hardening of the venting systems for GE reactor designs—that were similar to those at Daiichi—to prevent the buildup of hydrogen gasses, which at Fukushima led to the explosions that we all saw on television.

While installation of these modifications and buildings is not complete, it is well underway and much of the work should be completed by 2016, the deadline set by the NRC. While this isn’t as fast as some would like, given the complexity of the installation work and the limited number of qualified companies available to perform this work, the time needed to install this equipment is understandable. Some

of the work can be done only when a reactor is offline, which is once every 18 to 24 months for most nuclear energy facilities.

The NRC also required each nuclear site to reassess its seismic and flooding analysis to ensure that sites remain appropriately protected from extreme natural events. While the analysis is not yet complete, the preliminary seismic results reinforce the view that the robust designs and construction of these plants provide significant protection to the public if an earthquake were to occur. I suspect the story will be the same when it comes to flooding.

Later this summer, the NRC will publish a proposed rule called “Mitigation of Beyond-Design Basis Events.” It will set requirements for how operators respond to severe events as well as establish monitoring and testing requirements for the new FLEX equipment that has been installed at the sites. While the proposed rule hasn’t been issued, much of it is likely to put a “regulatory stamp” on initiatives that have already been undertaken by U.S. industry.

Additionally, the nuclear industry, at its own expense, has developed two \$40-million national response facilities—one in Phoenix and one in Memphis, Tenn.—that contain five full sets of portable backup generators,

pumps, standardized couplings and hoses that can be delivered to any U.S. nuclear site within 24 hours. Combined with the estimated \$4 billion in modifications at reactor sites, this has been a significant investment in enhanced safety.

One requirement that the NRC chose not to adopt was the imposition of external radiation filtration systems. While there was some debate about the value of this measure, a recent study indicates that these systems would not add significant value to the overall public safety at the sites.

As is the case today, when I was an NRC commissioner during the 9/11 terrorist attack, we heard calls from nuclear opponents claiming that we didn’t go far enough or fast enough in the agency’s response. While we worked swiftly, we also recognized that we didn’t want to impose needless, costly and sometimes counterproductive new requirements. Our focus was on finding commonsense and cost-effective solutions to enhance safety.

With that in mind, a recent report from Japan indicates that had the Japanese installed the same backup emergency equipment that I and my colleagues imposed post-9/11, they believe that the Fukushima accident would likely have been avoided.

So where do we go from here?

The NRC and the industry have taken significant efforts to provide added safety measures at U.S. reactors, based on lessons learned from an exhaustive examination of the Fukushima event. Just as it did after 9/11, the NRC has imposed commonsense, cost-effective solutions that will ensure the safety of the plants.

However, even regulators need to know when to put down the pen.

The NRC needs to complete its current rule-making activities, validate that the installation of equipment and procedures at the sites meet the public safety standard, and draw this chapter to a close. As a result of the changes that have and will be made at U.S. nuclear power plants, these reactors and the people surrounding them are far safer than they were four years ago. That is good reason to carry on.