



**NRC NEWS**

**U.S. NUCLEAR REGULATORY COMMISSION**

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**“USNRC 25th Annual Regulatory Information Conference Commissioner Plenary:**

**The Education of an Engineer in Policy Making”**

**Prepared Remarks of Commissioner George Apostolakis**

**at the 2013 NRC Regulatory Information Conference (RIC)**

**Tuesday, March 12, 2013**

When an attorney heard that that was the title of my speech today, I am told that he asked “Can you really educate an engineer?” As a result and given that I’m a former professor of engineering, I feel free to tell you a lawyer joke.

An engineering graduate student and a law student were having lunch. The engineer started peeling an orange. The law student asked, "Now, if you were to give someone an orange, how would you go about it?" The engineer replied, "Here's an orange." The law student said, "No! No! I'd tell him, 'Consistent with all relevant statutes, I hereby give and convey to you all and singular, my estate and interests, rights, claim, title, and advantages of, and in, said orange, together with all its rind, juice, pulp, and seeds, and all rights to bite, cut, freeze and otherwise eat the same, or give the same away with or without the pulp, juice, rind and seeds....’”

Having dispensed with the lawyer joke, I can now begin with my education as a Commissioner.

I have now been a Commissioner for almost three years. Before that, I spent my whole career in academia first at UCLA and then at MIT. My appointment as a Commissioner resulted in a major change in that blissful life. Today, I will offer several observations on this change.

Before I start, I know some people here view me as the Commissioner who is always promoting the use of risk information in regulation. I’m going to promise something that may shock some of you. My objective here today is to get through this entire speech without mentioning “PRA” any further. I hope you appreciate how painful that is for me.

I have found Commission activities to be a fascinating combination of science, engineering, law, policy, and stakeholder interaction. The Commission, as a collegial body, formulates policies, develops regulations, issues orders to licensees, and adjudicates legal matters.

First, let me talk about science and engineering because this is what I am most familiar with. Our technical staff deals with multi-disciplinary problems that require expertise that goes beyond the solving of equations. It also requires an understanding of the regulatory framework and the regulatory objectives.

Before becoming a Commissioner, I had spent fifteen years serving on the Advisory Committee for Reactor Safeguards. During my time on the ACRS, I was continually impressed by the technical expertise of the NRC staff. That impression continues today. The NRC staff is made up of a diverse group of very intelligent individuals dedicated to serving the important mission of the agency. I am very thankful for the support of the NRC staff in carrying out the Commission's work. I am less thankful when they don't agree with me.

Now, I would like to talk a little bit about law. The NRC is a Federal agency operating under several mission-setting statutes, like the Atomic Energy Act, and many other laws like the Government in the Sunshine Act and the Administrative Procedure Act. One challenge was the practical realization that I could not have a private conversation with more than one of my Commission colleagues on most substantive matters. Even when we're having lunch, it's advisable to have our lawyers present. Incidentally, another thing that took getting used to is how much of my life is controlled by my staff, particularly my Administrative Assistant, Kathleen, who determines what I do every hour of the day.

A new area for me was dealing with adjudicatory matters. Many restrictions come with a Commissioner's position as, in effect, an appellate judge in hearing-related matters. In that role, Commissioners are required to rule on many issues that are being pursued in our hearing processes before an Atomic Safety and Licensing Board. Because of this role, there are restrictions on speaking to the technical staff and others about such matters until a final decision is reached. Being a former professor, I find this frustrating, especially when it is a topic in which I have a strong interest.

Many believe that our government agencies are too bureaucratic and decisions take too long to make. But by design, our processes are open and transparent and involve our public stakeholders. It takes time to ensure that we have done a complete analysis and have considered all of the significant impacts of proposed actions. While I agree that this is the way it should be, I had to learn to be patient with the process, although some members of my staff think that I'm still learning.

With regard to the Commission's duty of formulating policy, I learned a lot about the diversity and large number of policy issues that come before the Commission. This is in large part due to our review of our requirements in light of the accident at the Fukushima plants in Japan. The Commission has faced serious policy issues related to decisions about how to best address beyond-design-basis accidents in our regulatory framework—including decisions about when it is appropriate to impose new requirements in the name of adequate protection of public health and safety. The decisions have not always been easy, in part because the Atomic Energy Act does not define adequate protection. Neither does the Commission in its regulations.

Although the Commission must decide the minimum level of safety that is necessary to allow licensed activities, the Commission has wide discretion in deciding how to achieve the statutory objectives. And, as one court has stated, “The determination of what constitutes ‘adequate protection’ under the Act, absent specific direction from Congress, is ... a situation where the Commission should be permitted to have discretion to make case-by-case judgments based on its technical expertise and on all relevant information.”

The Atomic Energy Act also grants authority to the Commission to provide a measure of safety above and beyond what is adequate. The Commission may require power plants already satisfying the standard of adequate protection to take additional safety precautions that the Commission deems necessary to “protect health and minimize danger to life or property.” Although the exercise of this authority is discretionary, the Commission has established general criteria and a process, in its backfit rule, for imposing new requirements on existing power plant licensees. Deciding what is adequate protection and what is a justified safety enhancement is not always easy.

In short, the Commission is rarely faced with a black-and-white situation when addressing safety issues. Safety is an amorphous concept. (Incidentally, my staff did not want me to use “amorphous”, but it’s a word of Greek origin and they lost.)

To give you an idea of some of the variety of topics the Commission considered in the past year, we held public meetings on such diverse topics as: license renewal for research and test reactors, matters of interest to the Organization of Agreement States and the Conference of Radiation Control Program Directors, the final report of the Blue Ribbon Commission on America’s Nuclear Future, the revision of reporting criteria for medical events, the status of medical isotope production in the United States, the results of the agency’s annual performance assessment of its licensees, a joint meeting with the Federal Energy Regulatory Commission on Grid Reliability, the status of lessons learned from the Fukushima Dai-ichi accident, the economic consequences of nuclear accidents, the operator licensing program, the status of recovery actions at the Fort Calhoun Station, venting systems for BWR Mark I and Mark II containments, steam generator tube degradation, and uranium recovery. These meetings provided an open forum for the Commission, the NRC staff, and our external stakeholders to discuss issues important to the agency.

Now I’ll talk a little about stakeholder interaction. On day one, I learned that another duty of a Commissioner is to approve outgoing Commission correspondence. These are affectionately known as “CORRs” among the Commissioners and their staffs. The large volume of letters from Congress, local governments, and the public was just one of the many things I did not expect to be spending a lot of time on as a Commissioner.

There is clearly a high and justified level of interest in the agency’s work. That interest has increased tenfold after the accident at Fukushima. I have had the honor of appearing before both the House and the Senate on several occasions in the past three years and I must tell you this can be a humbling experience. I imagine this is the way that the staff feels appearing before the ACRS.

I would have to say that the most difficult experience for me as a Commissioner came when I was publicly accused of not caring about safety. This was definitely the low point in my

service on the Commission. Almost as difficult to take, at times, is the negative portrayal of the NRC by some individuals, such as when the Commissioners are portrayed as being “lapdogs” of the industry. This portrayal could not be further from the truth. On the other hand, it is very gratifying when I hear people refer to the NRC as the “gold standard” of regulatory agencies.

In an opinion piece published by Bloomberg in late 2012, a former head of the nationwide litigation program within the Enforcement Division of the Securities and Exchange Commission observed that it was time for regulators at the SEC to do much more to prevent problems before they occur. He suggested that the SEC follow the example of the NRC, as a “federal regulator that places the highest priority on prevention” and that “has achieved impressive results through a regulatory regime that includes continuous inspection of all 104 operating U.S. nuclear plants.”

Another example of the NRC being heralded as the “gold standard” came in the aftermath of the Deepwater Horizon oil spill. The Department of the Interior’s Minerals Management Service (MMS) was the regulator for offshore oil drilling before the BP/Deepwater Horizon blowout in 2010. The National Commission on the BP Deepwater Horizon Oil Spill, created by President Obama in the wake of the disaster, found that MMS had a cozy relationship with the oil industry that led to safety lapses.

In response to the disaster, the Minerals Management Service was broken up into multiple offices, one of which is the Bureau of Safety and Environmental Enforcement, created to carry on the oversight function. The National Commission also found that the industry needed an overhaul in “culture” and recommended looking at the nuclear industry for an example of drastic improvement in safety culture. The National Commission noted that, following the accident at Three Mile Island, the NRC began initiatives to help influence the safety culture of the nuclear energy industry toward continuous improvement. One of these initiatives was to work with the nuclear industry and the public to develop a formal policy on the NRC’s expectations for a strong and effective safety culture.

Last December, in an attempt to instill a positive safety culture among both offshore oil regulators and the industry, the Bureau published a safety culture policy statement. In that policy statement, the Bureau stated that it “has reviewed the NRC’s safety culture policy and believes it provides a strong foundation for a similar approach for oil and gas operations.”

A Commissioner must listen to many voices and viewpoints when considering policy issues. In addition to receiving the views of the NRC staff, a Commissioner often receives diverse viewpoints from many other sources, including Congress, non-governmental organizations, other Federal agencies, State, local, and Tribal governments, and individual members of the public. These viewpoints can be expressed in letters or e-mails to the Commission, or at Commission meetings or other venues. At times, some people can be very passionate about their views on certain issues and those views can become infused with emotion. Nevertheless, it is important to listen to and try to understand each individual’s point of view in order to get a balanced perspective of the issues.

Diverse points of view also arise among our own staff and we have a number of initiatives to ensure that such viewpoints are heard. The agency’s open, collaborative work environment encourages all employees to promptly raise concerns and differing views without

fear of reprisal. The NRC's Open Door Policy allows any employee to initiate a meeting with an NRC manager or supervisor, including a Commissioner or the Chairman of the NRC, to discuss any matter of concern to the employee. Under the NRC's Non-Concurrence Process, employees may choose not to concur on any part of a document in which he or she has disagreed. In addition, employees are permitted to document their concerns and attach them to proposed staff positions to be forwarded with the proposed position as it moves through the management approval chain. Finally, the Differing Professional Opinions Program is a formal process that allows all employees and contractors to have their differing views on established, mission-related issues considered by the highest level managers in their organizations. After a decision is issued to an employee, he or she may appeal the decision to the Executive Director for Operations or the Chairman, as appropriate. Regardless of their opinion on specific issues, I have observed that all NRC staff share a strong focus on the agency's important mission of protecting public health and safety and promoting the common defense and security and they feel gratified that their work contributes to this mission.

Speaking of diverse viewpoints, the Commission itself has diverse points of view, and I consider this to be a positive, healthy thing. Nuclear safety matters are technically complex. This is one of the reasons that there is an independent five-member Commission. The Commission's independent and multi-member character, with staggered terms for its members, is designed to insulate regulatory decisions from political consideration and to provide stability for regulatory policy. This commission structure allows for a diversity of insights to be brought to bear in the Commission's decision making.

With regard to decision making, I have been very impressed by how decisions are made at the NRC. Decisions on nuclear safety matters should not be made without careful deliberation. Such deliberation includes the technical evaluations by NRC senior management, the views of the statutory Advisory Committee on Reactor Safeguards, public meetings, and inputs from external stakeholders. The benefits of this open and transparent process were highlighted in the agency's implementation of lessons learned from the Fukushima accident. As a result of this process, the technical basis for implementing the NRC's Near-Term Task Force recommendations was strengthened and additional technical issues for consideration were identified. In particular, review of the recommendations by senior NRC staff members identified additional issues such as filtration of containment vents and loss of the ultimate heat sink. The ACRS made recommendations related to seismic and flood evaluations. Finally, public stakeholders made contributions on issues such as the distribution of potassium iodide following an accident and offered perspectives on the process for issuing orders.

As I have already stated, the Commission is well served by its dedicated staff, with many senior members who bring long experience and advanced technical expertise. The NRC has long been known for the stellar reputation of its staff. I have learned a great deal about our employee recruitment and retention programs since becoming a Commissioner. In particular, I have been very impressed by our programs for promoting a diverse work force at the agency. I have had the pleasure of attending many events celebrating diversity at the NRC. I have a much greater appreciation for NRC's strides towards greater diversity.

One of the benefits of my role as a Commissioner is the opportunity to visit the facilities of many of our reactor and materials licensees. I view these visits as essential to my understanding of how our requirements are implemented in the field. I have also had the

pleasure of visiting all of the NRC's regional offices near Philadelphia, Atlanta, Chicago, and Dallas. I am always impressed by our NRC staff members who are serving on the front lines of the agency's business. I am especially impressed by the quality and dedication of our inspectors. Finally, I have had the opportunity to meet with the NRC's regulatory counterparts and others in the nuclear field in other countries. I find the sharing of experiences with our fellow regulators to be an invaluable experience.

I hope I've been able to give you some idea of the many ways in which this life-long engineer and academic has been educated as a Commissioner. I have to say that, if this job were only about the science, it would be much easier. People often say that life is a process of continuous learning and, in this job, I am learning something new every day. The question I get asked most often is "How do you like being a Commissioner?" I can tell you that I am enjoying my time on the Commission very much. I'm particularly gratified that most people can now pronounce my name reasonably well. It is a very challenging and rewarding experience and I am grateful that I get to work every day with high caliber people such as my fellow Commissioners and the NRC staff. I consider it an honor to serve on the Commission.

I think it's only appropriate to finish with another lawyer joke.

Q: What do you get when you cross the Godfather with a lawyer?

A: An offer you can't understand

Thank you for your attention and I'd be happy to take any questions you have.