THE *NUCLEAR NEWS* INTERVIEW

Allison Macfarlane: Perspectives of the NRC chairman

In an exclusive interview, the Nuclear Regulatory Commission's new chairman and newest member addresses agency staffing, waste confidence, and other topics.

Allison M. Macfarlane was sworn in as chairman of the Nuclear Regulatory Commission on July 9, replacing Gregory Jaczko, who announced his resignation on May 21. Macfarlane is the 15th chairman of the NRC and the third woman to hold the title. She has been appointed to serve the remainder of Jaczko's term, which ends on June 30, 2013.

A geologist by education, Macfarlane was most recently an associate professor of environmental science and policy at George Mason University in Virginia. She was a member of the Blue Ribbon Commission on America's Nuclear Future, and in 2006 was a coeditor of the book *Uncertainty Underground: Yucca Mountain and the Nation's High-Level Nuclear Waste,* a collection of articles by authors from the geosciences, industry, and government on various technical aspects of the high-level waste repository proposed for the Yucca Mountain site in Nevada.

During her earlier academic career, Macfarlane held fellowships at Radcliffe College, Stanford University, and Harvard University. She was a Social Science Research Council–MacArthur Foundation fellow in International Peace and Security, served on a National Academy of Sciences panel on spent nuclear fuel and excess weapons plutonium disposition, and was a senior research associate at the Massachusetts Institute of Technology and an associate professor at the Georgia Institute of Technology.

Macfarlane spoke with *Nuclear News* Senior Editor E. Michael Blake by telephone on October 12.

Macfarlane: "The staff is gearing up and ready to go" on the Waste Confidence environmental impact statement.

Based on what you've seen during the time you've been in office, do you think that NRC oversight or involvement in any of the areas that it regulates should be increased or broadened in any way?

I think the NRC is doing a pretty good job. We're constantly revisiting and rethinking a number of issues and regulations. Issues come up, such as Fukushima, which certainly prompt us to look again at reactor safety and at the safety of other nuclear facilities, and to react. And we have been doing that.

Then as far as you can tell, what the NRC is authorized and required to do by existing law is sufficient to protect public health and safety across all of the nuclear fields?

At the moment, I think that we're doing okay. But as I said, there are a number of situations where we do reconsider. We have a strong "lessons learned" program. After we make some changes, we revisit and see if we went through the process well, if the changes that we made or required were reasonable, and whether they met the goals that we were trying to achieve.

There is a great deal of stakeholder involvement in the development of regulations and in how regulations are put into effect. In particular, the Nuclear Energy Institute is very much involved in submitting proposals on how to meet the intent of regulations, and occasionally the NRC endorses NEI's input. As long as this remains a completely public process, do you think that's appropriate?

I think it's appropriate for any one of the variety of stakeholders to participate, whether it is from the industry, from a nongovernmental organization, from states or tribes or local governments. We're interested in hearing from everybody.

The NRC has added personnel in recent years, in particular to staff the Office of New Reactors. As things stand now, do you think that the agency has enough technical expertise on staff?

I think that we have an excellent staff here at the NRC. To date, we have been performing the work that we need to. Obviously, we have a number of nuclear engineers, but we also have seismologists, geologists, hydrologists, and meteorologists. I could go on, but I'll stop. We have a wide variety of talents here. If there are specific areas where we do need some additional help, of course, we go outside and we find that help.

NRC Chairman Allison Macfarlane listens as Jerry Bischof (at left), site vice president of Dominion's North Anna nuclear power plant, guides a tour of the facility in Louisa County near Mineral, Va. (Photo: NRC)

You mentioned geologists just now, and you are a geologist yourself. As the chairman, do you find that it's important to bring in your own personal expertise? Or do you rely more on your personal technical staff? Can your background help inform regulation on seismic issues, related to both Fukushima Daiichi and the revised

model on the central and eastern United States?

Certainly, because I'm a geologist, I have an interest in the work of the NRC that touches on the earth sciences. My technical background will help me understand the variety of issues that we face in a certain way. I know that my colleagues have different sets of expertise, and in some areas I will rely on their advice.

The commission is a collegial body, but under certain circumstances, such as a declared emergency, it is possible for the chairman to take emergency powers and act for the agency as a single individual. What is your position on how and when the chairman should exert that kind of sole authority?

There are very limited circumstances under which the chairman exerts that kind of authority. There are set, established commission procedures that guide decision-making in those areas. I would follow those commission procedures.

In June, the District of Columbia Court of Appeals overturned the agency's Waste Confidence Decision, which found that storage of spent fuel at reactor sites would be safe for several decades. The NRC responded by suspending final action on license renewals and new reactor licenses until the agency provides an environmental impact statement that satisfies the terms of the court ruling. Do you expect that the staff will be able to develop the statement by September 2014, as planned?

Absolutely. The staff is gearing up and ready to go. We're in the middle of setting up a waste confidence directorate that's almost staffed up. The commission has received a few papers from the staff on their plans for moving forward, and I'm meeting with the directors of the different departments here at the NRC. I'm confident that we will be able to meet that deadline.

The District of Columbia Court of Appeals is also considering a request for a writ of mandamus that would compel the agency to resume licensing of the high-level waste repository planned for Yucca Mountain. Given that neither Congress nor the president has set aside money for Yucca-related work, what would the NRC do should it be ordered to resume licensing work, and have you made any preparations for this?

I think this is hypothetical. I'm going to reserve comment until we do receive direction from the court on this matter.

Within the budget authority that you have, if you were compelled to resume Yucca Mountain work, is there flexibility in the NRC budget to allow the agency to comply with such a court order?

Again, I'm going to say that we will wait to receive direction from the court on what exactly its decision is.

Would you like to express your position on the siting of a high-level waste repository at Yucca Mountain?

No.

Do you have technical concerns about a repository at Yucca Mountain, such as the rock form or the possibility of contact with an aquifer?

Let me explain. The technical analysis that I did on Yucca Mountain was in the pre-2002 time frame. Since then, in 2008, the Department of Energy submitted a license application. Then the NRC did some technical analysis. I haven't looked at either of those. So I haven't updated myself on the technical situation or on any new information that's come in within the last 10 years. And so, as a careful scientist, I would hold off on making any judgment.

Do you think that, in general, geologic storage of high-level waste would be practical?

Yes.

Is it just a matter of getting enough information about a specific site?

Siting a geologic repository requires a couple of things to come together. One is a good technical basis for a site, and the other is a good political/societal basis for a site. You have to have a reasonably good geologic environment. I'll go beyond saying just "rock type." I think it's a mistake to focus solely on rock type. But you also need the political piece. You need the agreement of the people who will host the site. That doesn't mean a unanimous agreement, but it means that you need consent. This is basically what the Blue Ribbon Commission says. Here I'm speaking more as a Blue Ribbon Commission member and not as the chairman of the NRC.

Is what has happened so far in New Mexico, both with the Waste Isolation Pilot Plant and the interest in other facilities by the state and local governments, potentially a model for local agreement that could work going forward?

I'm not sure. I haven't followed the latest situation. As chairman of the NRC, I'd say we don't have a dog in that fight right now.

Things have slowed down somewhat on the deployment of new reactors, although there are possibilities for small modular reactors [SMR]. Do you think that the agency needs to recruit technical staff that already has, or can obtain, experience outside light-water reactors in order to address the many systems proposed for SMRs?

My understanding is that the vast majority of SMRs, the ones that the DOE is looking at, are mostly the light-water versions.

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So, because of our experience with light-water reactors here at the agency, I think we're well-prepared to deal with the light-water small modular designs for which applications may be forthcoming. And they may be forthcoming in the next year. We'll see.

The agency, however, is still obligated to examine in more detail the licensing basis for gas-cooled reactors, because the Next Generation Nuclear Plant would be gas-cooled. Do you think there is enough expertise on staff to examine those issues?

I think we have the expertise we need to examine the potential applications that will come in within the next five to 10 years.

What do you see as the key issues that the agency will have to address in the coming few years?

Well, number one, we still have Fukushima recommendations to work through. We prioritized them into Tier One, Tier Two, and Tier Three recommendations. We worked through the Tier One recommendations. We issued three orders, and we issued some requests for further information on seismic and flooding hazards and communications. Those are moving forward. The plants have been acquiring new equipment. They have been working toward hardening the vents in the Mark I and Mark II boiling water reactor designs. Licensees are starting to think about spent fuel pool instrumentation. They have been doing seismic and flooding walkdowns. They're beginning seismic hazard analysis. But there are a number of other issues that the Japan Near-Term Task Force raised, and so we are now turning our attention to them. Those will occupy us at the NRC for the next several years. And very urgent, as you pointed out earlier, is the Waste Confidence Decision. And, of course, our main mission is to make sure that nuclear facilities are operating safely and to protect the public health and the environment. NN