

TOSHIBA 4S WEDNESDAY APRIL 29 2009

Toshiba 4S and Its NRC Queue Hurdle

Bill Conlon writes *Knowledge and Thoroughness: Musings on Energy, Technology, Music and Politics*. Bill has a degree in Nuclear Engineering and is a licensed Professional Engineer (Mechanical) in California. About 8 months ago, I discovered Bill's blog because it included a [post about his mentor, John Tully, who was a former Chief Mechanical Engineer for ALCO Products](#), the builder of several small nuclear package power plants for the US Army. I occasionally visit to see if Bill has any new information about his conversations with that pioneer.

During my most recent visit, I found a link to a short article in the May-June 2009 issue of *American Scientist* titled *A Nuke on the Yukon*. (Yes, I also find it a bit disconcerting to reference an article from an issue that seems to be a prediction of the future, but magazines often post-date their issues.)

The article provides a good synopsis of the Toshiba 4S project that is still ongoing with the village of Galena, Alaska and concludes by mentioning some of the unique regulatory hurdles that small reactor designers and promoters must overcome:

Ironically, the renaissance may work against Galena and Toshiba/Westinghouse. At least 29 new big reactors are at various stages of planning, and the NRC is staffing up for an anticipated burst in the number of filings for approval. (There are 104 nuclear plants currently operating in the U.S.) The Office of New Reactors at the NRC has advised Toshiba that only limited attention will be given through 2010 to "grid-appropriate" (their term for small) reactor designs. It remains to be seen whether the incoming Obama administration will take a more enthusiastic view of small nukes, or a more sympathetic view of citizens in the outlands. In the NRC's 4S file, a letter from the licensing lead for a competing "grid-appropriate" reactor, the Hyperion Power Module (the size of a hot tub, at least on the drawing board), reads "These are areas that are paying through the nose for diesel fuel to keep the

lights on. Some are charging 47 cents per kWh, and a lot of people are sitting in the dark.”

To me, that is an important situation worth a bit of action to try to correct. Unlike many nuclear advocates, I do not rail against the NRC and its performance; I think they are one of the more well run federal agencies and I have a lot of respect for the people that I have met who work there. What I do challenge is they way that they are funded and the way that they have to prioritize their efforts to license new power systems.

The NRC provides a mandatory service to nuclear power plant vendors - the vendors have to go through the NRC processes (at their own cost, by the way) before they can sell their product. By controlling this queue, the NRC can effectively make or break a company. Even with great designs that are well engineered and safe, a company trying to break in to the market can have its capital resources stretched to the breaking point by the delay between design finalization and licensing if government funding decisions force the NRC to turn its attention elsewhere. Here is the comment that I added to the American Scientist article:

It is a bit sad to have a regulatory body like the NRC having to tell applicants like Toshiba and Hyperion that they are simply too busy to give proper attention to the process of licensing small "grid appropriate" reactors. I fully understand that there is a need to prioritize the expenditure of government funds, and the size of the market for large power reactors is currently far larger than for small ones like the 4S and the Hyperion Power Generator.

However, the individual needs of the people in places like Galena are just as important as the individual needs of the people in large market territories where 1000 MW plus reactors are appropriate. In Galena, electrical power supplies are dependent on burning hard to deliver diesel fuel in balky old generators. It costs about 45 cents per kilowatt hour.

In the places that will host the 29 big reactors, the customers already have several far less costly and difficult electricity supply options.

Galena is not unique - there are billions of humans living in places where access to reliable, clean, affordable electricity does not exist. Those people could really benefit if the US government could figure out a way to devote sufficient NRC resources to get the small power plants licensed in a reasonably timely manner so that suppliers like Toshiba and Hyperion can make some sales before they run out of capital.

I have had the opportunity to talk to several NRC decision makers over the years about their processes for making resource allocation decisions. They have privately expressed their apologies that they are unable to direct what they consider to be the right level of attention to smaller designs, but have also told me that their hands are tied by their budgets.

The only real solution to this is political - we (those of us who believe in atomic fission and want to see it made available to more people) need to figure out a way to convince legislators that properly funding the NRC is a cost effective way to invest taxpayer money. The US Treasury, by law, gets paid for regulator time invested in license reviews, but there is currently a 2-3 year delay between the time that the applicant begins paying fees and the NRC receives and increase in its budget authority. That situation must be addressed.

P. S. I got a call a few weeks ago from an old friend from my formative years in nuclear power. He knows about Atomic Insights, [Adams Atomic Engines](#) and my efforts to keep up to date on power plant technology and markets. His current employer - a large power plant developer who shall remain nameless - had been contacted by Toshiba to set up a sales presentation about the 4S and its applications for some of the markets that his company currently serves. After we talked, he decided that he would take the time to listen to their presentation. Just thought I would throw that tidbit out there to show that there is growing interest in the potential market for grid appropriate reactors.

Labels: [NRC](#), [NRC fees](#), [Toshiba 4S](#)

POSTED BY ROD ADAMS

