

THE NUCLEAR NEWS INTERVIEW

Ken Robuck: The D&D business model

With decades of experience in decommissioning shutdown nuclear power plants, EnergySolutions takes on the full life cycle of radioactive waste generation, including characterization, packaging, transportation, and disposition.

As president of EnergySolutions' Disposal and Nuclear Decommissioning Division, Ken Robuck oversees the decontamination and decommissioning of Exelon's Zion nuclear power plant in Illinois and the La Crosse plant in Wisconsin. In December 2016, EnergySolutions, in a joint venture with AECOM, was awarded a decommissioning contract for the San Onofre Nuclear Generating Station (SONGS) in California. One of the largest commercial nuclear plant decommissioning projects in the United States to date, the SONGS project has an estimated total cost of \$4.4 billion, including used fuel management, radiological decommissioning, and site restoration costs.

A graduate of Auburn University with a bachelor's degree in civil engineering, Robuck has over 34 years of experience in the energy and power services industry. Prior to joining EnergySolutions in 2013, he was president of Williams Industrial Services Group, a provider of construction, maintenance, and management support services. Robuck originally joined the Williams Group in 1995 as vice president of fossil and nuclear for Williams Power and was named president in 1997. He left Williams in 2000 to serve as vice president and general manager of Alberici Constructors, but he returned to Williams in 2005.

Nuclear News Associate Editor Tim Gregoire interviewed Robuck about EnergySolutions' involvement in D&D and waste management projects.



Robuck: "The most significant contribution to the decommissioning, besides quality people and a decommissioning project management model, is our assets."

EnergySolutions currently has D&D projects at La Crosse, Zion, and SONGS. All seem to be very different projects. Can you tell us what challenges the company has had and is facing at each plant? What are some of the similarities?

They are all a little bit different from a commercial point of view, but the approach for each of these projects is the same. We put together a standard decommissioning model that incorporates lessons learned from past jobs and helps establish the boundaries within which we operate.

It is a fairly mature model that we developed prior to the Zion project. We had participated in decommissioning projects prior to Zion, and we incorporated that experience into our current decommissioning approach. Zion was the first full-scale decommissioning project with a license transfer, and that has been an opportunity to hone our skills. But from a decommissioning point of view, there is really no major difference.

What makes the third-party D&D contract EnergySolutions entered into with Exelon a practical decommissioning model, and do you see it becoming the industry norm?

I think that for both Exelon and EnergySolutions, this model has worked well. The license transfer was the first of its kind, and it has allowed us to work directly with the regulator to ensure that we meet all of the standards and limits we are required to meet from a regulatory point of view. Because we are directly involved with both the Nuclear Regulatory Commission and the states, we have firsthand knowledge of the process, and it's not going through a filter.

Utilities are great operators, but decommissioning is not a business they have had to be in. We created a business model for it, and the most significant contribution to the decommissioning—besides quality people and a decommissioning project management model—is our assets. That sets us apart and makes us predictable, whether it is in cost or schedule. We own the packaging assets to package the waste, we own the transportation assets to transport the waste, we own the processing assets to process anything that needs it, and we own the disposal assets. When you have all of that in your portfolio, you can control the outcome a lot more than if you were just a project-based company implementing decommissioning from a project-only approach. That is typically where most of our competitors sit. They are looking at the decommissioning market as being a project-only type market.

Contractually, what lessons learned from the Zion agreement with Exelon did EnergySolutions apply to its contracts with Southern California Edison and Dairyland Power Cooperative?

When EnergySolutions, back in 2008 or so, was considering the license transfer with Exelon, we realized we had to stimulate the market. And to do that, we had to show Exelon that we were willing to financially stand behind the project to a greater degree. So the parental guarantees and letters of credit were higher with the Zion agreement than I think they will be in the future. In other words, you have to make sure you can stand behind a first-of-its-kind project like Zion through your financial assurances. Because we have proven that we can, and have proven that we can be predictable on cost and schedule, I see the financial assurances for these jobs going down over time.

Commercially, the biggest difference between Zion and La Crosse is the ownership of the trust fund, which at Zion was totally transferred to us. At La Crosse, we are managing the trust fund, but it still stays with Dairyland. We are the licensee at both Zion and La Crosse. The only difference is who owns the trust fund. Financially, we either benefit from or are hurt by the performance of the trust fund in either case.

The SONGS contract is completely different. It is a general contractor type of agreement, and we are not the licensee. The owner has control of the trust fund. They are the go-between entity between us and the regulators, both in the state of California and at the NRC. They also own any kind of liability for changing laws or delays for permits, approvals, and all that. It is your typical lump-sum contract structure. So there are quite a few differences with SONGS, but as far as doing the

physical work of decommissioning, the model we created and all of the operational aspects will remain the same.

In looking forward to other projects, including SONGS, are there any systems, equipment, or other methodologies that can be transferred from previous projects to help increase efficiencies? What are some of the most notable lessons you've learned from previous projects?

I think they all can be transferred. If you want to know the most significant, at SONGS we are not doing the pool-to-pad [transfer of spent nuclear fuel to dry storage]. That was subcontracted out to Holtec.

But there are a lot of lessons learned in doing the pool-to-pad.

The most significant pieces though that will transfer between projects are two things. One is the lessons learned at Zion for doing reactor vessel and reactor vessel internals segmentation. That is a critical piece of the job. The other is more in the overall methods of doing decommissioning—how it all integrates and the timing of when you start one process and what you do with the others in the meantime. There also are a lot of technologies, such as the diamond wire saw that we used at Zion that we can set up on a piece of pipe and people can cut up



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all of the piping systems remotely without getting any kind of dose from being next to the pipe. There's also the fact that we are using larger equipment to do decommissioning than was maybe utilized in some previous decommissioning jobs. So it is a multitude of things like that. But if I had to put my finger on one item, I would say reactor vessel and internals segmentation is probably the key lesson learned. Maybe the second would be the proper means and methods to transport the waste. Transportation is a significant piece of the cost, and I think we keep perfecting that, and we see the benefits of the improvements.

The NRC is working to revise its rules regarding power plant decommissioning, with a draft rule expected to be released next year. What changes, if any, does EnergySolutions hope are included in the new rulemaking?

There are a couple of key things. Number one, I think the rulemaking is good. Number two, the NRC has received our comments, and we think they're incorporating those. We feel the rulemaking should apply to the entire decommissioning process. In other words, how do we eliminate exemptions throughout the whole process, not just at the onset of decommissioning?

We strongly feel that the post-shutdown decommissioning activities report [PSDAR] should not undergo a formal license amendment approval process. We also think that when you look throughout the decommissioning, there are a lot of different regulations that require you

to do a notification within a certain period for certain reasons. None of those notifications have really been tweaked or managed from a decommissioning-only point of view. That is why it is important to get a license-approved PSDAR, so that this information is out there, it is standard and customary, and we don't have to send a letter to the NRC saying, "Hey, we're notifying you about this because it doesn't really apply to decommissioning." So, we are trying to incorporate all those lessons learned throughout our decommissioning history and have the NRC evaluate them one time rather than going through the process over and over again. It saves us time, it saves the NRC time, and it saves the ratepayers money.

Looking at the current operating fleet, do you feel that the decommissioning trust fund system adequately guarantees that money will be available to meet the projected D&D needs? As a whole, are cost estimates getting closer to actual costs?

I think the funding process is a good process. It is set up so that biennial decommissioning cost estimates [DCE] are done by independent groups, and utilities are required to either set aside or financially support those cost build-ups. There are very few large projects that are funded ahead of time, and you want those funds set aside because nobody can really predict the future.

From a macro point of view, I feel that the DCEs that are out there in the marketplace—even though we do some, we don't do all of them—I think they're in line. Even when our competitors do the DCEs, when we look at the industry doing the estimates for utilities, I think they are overall in line with the actual costs required to decommission a plant.

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There is always the risk, however, that when a plant shuts down early, they won't have enough money, because the DCE anticipates that the plant will at least go to some license termination date. That is the biggest gap you see in the industry on that. But the funds themselves and the way the system is managed is an adequate system.

With more power plants at risk of closing and facing decommissioning, what is EnergySolutions doing to recruit D&D expertise and to ensure that a dependable personnel pipeline will be available?

I don't know if we've officially announced this, but we are building a new headquarters in Charlotte, N.C., for our decommissioning project management and estimating team. The company's corporate office is in Salt Lake City, and we have remote offices in many different areas. We are in Knoxville, Tenn., Columbia, S.C., we have a small group in Charlotte today, we're up in Canada, we're in D.C. We are really spread out, and that means we can pull a lot of people from different areas. But we found that we needed a central focus on decommissioning.

Currently, our decommissioning group is in Knoxville, but we are moving the entire decommissioning operation and focus to Charlotte. That will probably happen in March of next year. And the main reason for that is we think the talent pipeline there is broader than it is in Knoxville. We think we can attract more people to the operation as we grow this business in Charlotte than we can in Knoxville. It is obvious that a lot of our competitors have offices there. It's a more progressive town, and you can fly in and out of there without a lot of airport connections, and these projects are all over the U.S. We hope this will allow us to develop the right skill set and keep the people who want to be in that area for a long time.

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La Crosse: EnergySolutions is decommissioning the boiling water reactor under a license stewardship agreement with Dairyland Power.

Besides workforce, are there any other issues on your radar regarding the number of plants potentially facing near-term decommissioning?

I think there will be more plants announcing decommissioning in the next 10 years than are identified today. So at least for the short term, you are going to see additional growth. There are too many plants that are financially underwater. They are waiting to see if they are going to get these credits and things like that, but if you look at the dollar amount required in a state to get a credit to continue to operate, like Illinois and New York did, it is a lot of money, especially in states where you have multiple plants. So we think that the near-term market for decommissioning will grow instead of decline.

Besides workforce, to me the other big issue facing the market is what to do with the spent fuel. The degree of uncertainty that these plants face regarding the question of when the spent fuel is going to be picked up and what is reimbursable or not is really going to plague the decommissioning industry and the utilities that are trying to exit their operating plants. Workforce is more my issue, and you could say that spent fuel is more of a utility issue, but it is an industry-significant issue. And it is not just long-term disposal, but interim

storage and what the Department of Energy is going to do to reimburse utilities and what the ultimate liability will be for these plants regarding the spent fuel. The reason it gets to be my problem is that you find some of these shutdown plants trying to off-load the spent fuel liability onto contractors, which I don't think was ever anticipated. So we're having to stay up at night thinking about that.

Community engagement has played a significant part in the Zion project and will certainly be a big part of the SONGS decommissioning. How has such engagement influenced EnergySolutions' D&D operations, for better or worse, and how is the company working with communities to ensure that projects are done safely and cost effectively?

I believe that our community engagement has been very successful. It is something that you want to see replicated from one decommissioning site to the next. All of us who have been in nuclear a long time realize that we are responsible to the community to com-

municate to them and answer any questions and offset any fears they may have. And you have to do it in a way they can understand, and the best way to do that is to communicate a lot and be as transparent as you possibly can. That is what we try to do. Whether it is with our regulators, the community, or the customer we are supporting, we try to be completely transparent.

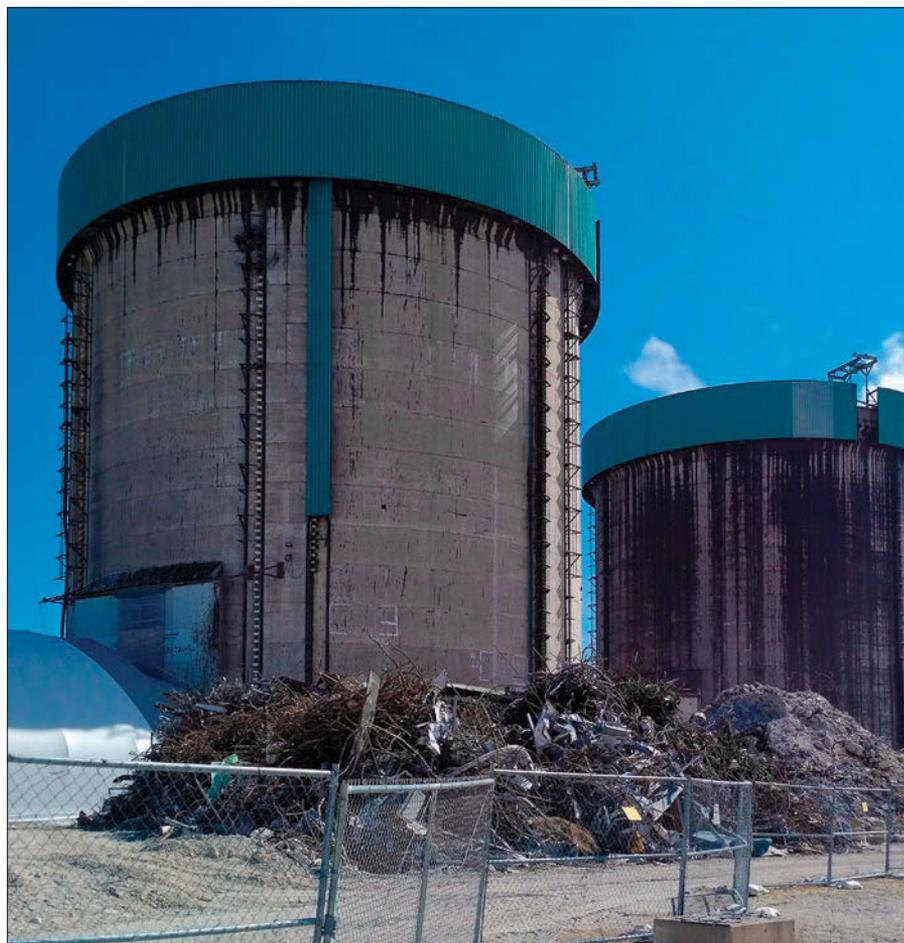
When you over-communicate and are transparent, you develop long-term trust and relationships that serve you well, because these are not short-term jobs. Relationships with these communities are eight, 10-plus years long. It is not just

“When you over-communicate and are transparent, you develop long-term trust and relationships that serve you well, because these are not short-term jobs.”

a flash in the pan where you can go say something and make everybody feel good. You have to make sure they understand that this is a long road.

Also, different communities are going to come at this in different ways, and different people are going to have different concerns. For some of them it is about jobs. For some it is the nuclear piece. For some it is about what is going to happen with the land afterward. And for some it is going to be about all those things. You have to communicate what you are doing and how you are doing it. We also get the regulators involved—the NRC has been to our community panels—so you are not saying to the community that this is just us doing this, but rather that this is all of us together. It is the regulators, it is EnergySolutions, and it is the owners of the facility. I think our approach has worked well.

One thing that has helped with the success of that is when community engagement panels are created, you need to look at the community as a whole and develop a diverse panel that can touch the entire community. It is also very important to maintain and update a project website with current meeting minutes and project updates. You will have a few individuals who no matter what you do are going to come up with something they're not happy about. But the important thing is to make sure that you continue to inform them, and when they ask questions, you get back to them in a timely manner. I think we have done a pretty good job of making sure we try to answer their questions and keep them informed. **NN**



Zion: Lessons learned from segmenting, packaging, and transporting waste are being transferred to other D&D projects.