

Australia's Nuclear Power Option

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After reading about the government's interest in exploring the nuclear energy option in Australia recently, I found myself imagining how such a development might unfold. First, let me admit that I am unequivocally pro-nuclear – I believe the world must pursue the increased use of nuclear energy to meet its needs in the coming decades. The Australian government's desire to evaluate options is responsible and prudent. I also hold ANSTO and ARPANSA in high esteem, and am confident that there are many competent people at these two organizations who could support any initiatives in this regard.

I am also realistic. I don't think that a nuclear power plant will be built in Australia in my lifetime. The general public is uninformed and emotionally opposed to all things nuclear. Based on the extensive whoopla in recent years with OPAL, I can't imagine how sniping politicians would decide to permit the construction and operation of a 3000 MW thermal nuclear power plant. FIFA officials will allow the Socceroos to win the World Cup before that happens.

Let's say I'm wrong, however, and pigs take flight. Would the enabling legislation to introduce nuclear power involve ANSTO and ARPANSA? Would private enterprise be involved in ownership and operation, as is the case in many parts of the world? Many assume there would be a relationship similar to what exists with HIFAR today. My concern with this assumption is that the deep-rooted customs and arrangements at Lucas Heights, which may have served a research organization well in the latter part of the 20th century, may be woefully inadequate for initiating a program of nuclear power in Australia.

The best indication of how ANSTO might approach its role in support of a nuclear power initiative is reflected in the arrangements for OPAL. Although the designs of a research reactor and a nuclear power plant are vastly different, the conduct of operations is surprisingly similar. Last year the Institute for Nuclear Power Operations (INPO) published "Guidelines for Performance Improvement at Nuclear Power Stations". INPO promotes the highest levels of safety and reliability in the operation of US nuclear electric generating plants. This INPO document, which could easily apply to a variety of facilities other than nuclear power plants, states that excellence is embodied by an organization that views performance improvement as a never ending journey rather than a finite destination. I will paraphrase a few of the characteristics that, according to INPO, are evident among the staff at high-performing organizations.

Self-critical

- *Seeks opportunities to improve*
- *Values early identification of performance shortfalls*
- *Encourages a questioning attitude*

- *Avoids complacency*
- *Believes the least positive performance feedback*

Staff should be encouraged to identify areas for improvement. Leaders understand that a strong problem-reporting culture leads to a safety conscious work environment. Minor problems should be documented in order to promote improvement. The threshold for reporting should be low. As a point of reference, about 15 new issues are documented in the Quality system each day at a typical US commercial nuclear plant.

Seeks Excellence

- *Avoids just complying with minimum standards*
- *Actively seeks gaps between current and desired performance*
- *Focuses on results*
- *Takes an occasional informed risk to achieve “breakthrough” levels of performance*

Management expectations should reflect best practices. These high standards should be reflected in procedures and understood by all. Self-assessments (voluntary assessments conducted by the operating organization) should be commonplace. Individuals should be rewarded for positive results.

Diverse Approach

- *Uses multiple inputs and approaches to assess performance*
- *Uses benchmarking to improve*

Demonstrate a welcoming attitude toward oversight. Request experts – persons with relevant experience - from outside the organization to provide feedback. Put a premium on high potential employees with relevant experience elsewhere.

Prioritizes Effectively

- *Addresses issues consistent with their significance*

Use PRA to maximize safety with limited resources. The operative word here is “use”. Make risk-informed decisions. For example, every US nuclear power plant uses PRA in developing its daily work schedule and outage plans.

Implements Well

- *Applies appropriate resources and direction for success*
- *Maintains a bias for action*
- *Monitors progress of improvement actions and acts quickly when shortfalls are detected*

Directors and managers should lead. This means communicating the vision of improvement and engaging the staff. The organizational structure of a production facility differs from that of a research lab or university. The corporate Boards of most US nuclear utilities consist of at least one individual with nuclear experience.

Broad Involvement

- *Avoids the assignment (or perception thereof) of performance improvement to a single group*
- *Makes appropriate adjustments when key personnel changes occur*

Safety is an essential way of doing business, it is not a Division. The operating organization should have the necessary skills and experience to conduct its core business. Senior managers should have relevant nuclear experience. Directors and managers should be leaders who create a burning platform for change when the impetus may not be apparent to others. They use performance metrics and goals strategically.

Does ANSTO exhibit attributes of performance improvement?

The question of nuclear power is political, of course. If the political winds were to shift, I am sure that Australia could address the financial and technical obstacles. There would be many of the same challenges other countries have faced in developing a nuclear power program. Australia would have one big advantage, however – the many successful programs in effect around the world today have already incorporated many of the INPO attributes into their regulatory and operating frameworks. The engineering is straightforward - there are several good nuclear designs approved overseas. What is missing is the regulatory and operational framework. I wonder whether ANSTO would be nimble enough to play a beneficial role in Australia's nuclear power future. The key question is "Would Australia learn from successful nuclear programs overseas?"

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