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Fueling the Renaissance

Recent news reminds us that the nuclear renaissance is alive and well. Last week, the United Kingdom issued its white paper on nuclear power and Egypt announced a site for its first nuclear plant, among a number of other developments that reflect positively on the future of nuclear power. Those of you who get our News Headline service will recognize the stream of articles that touch on nuclear power expansion has not abated and, if anything, has intensified in recent months, signifying that there is a true nuclear power movement underway across the globe.

While the UK white paper did not result in any new reactor orders, at least not yet, it did make a powerful argument why nuclear power has to be an important part of the energy mix, if not the centerpiece of energy growth, over the next couple of decades (see related story on page 2). Here, the government plans to take steps in actively promoting the construction of new nuclear reactors, but leave the actual construction and financing to private companies, or much the same approach that is being followed in the United States.

There are some that think that as the U.S. goes with respect to nuclear power, so will the rest of the world. But, as the statistics in the box indicate, a number of reactors around the world are starting commercial operations, starting construction, or being ordered, none of which are yet in the U.S. Still, this is not to say that the U.S. support for nuclear power, both domestically and internationally, has not had a positive impact on the prospects for nuclear worldwide.

It might be much the same with the recent announcement by the United Kingdom, as other European countries revisit their nuclear programs in an era of increased focus on energy security and environmental consciousness. In this regard, the German nuclear industry welcomed the UK report, stressing the need for the German government to reassess its position on nuclear power. Also, in Sweden, another European country that is considering phasing out nuclear power, one of the parties in the ruling alliance has urged a reconsideration of its phase-out plan. There is also significant movement within Italy to change that country's opposition to domestic nuclear plants. By studying and coming up with approaches to new reactor build, countries such as the United Kingdom can help "fuel" the nuclear renaissance as this activity serves as a model and perhaps as an inspiration for other countries to follow.

Some countries, however, already seem to have enough inspiration to proceed with nuclear power development. Just the past week has provided us with a "new nuclear country a day," or as some might call it "the Sarkozy nuclear bandwagon." In all seriousness, the Egyptian announcement of a reactor site selection (see page 3), Thailand's announcement of four reactor vendor proposals (see page 3), the U.A.E.'s agreement with three French companies to carve a path to nuclear power (see page 3), Eskom of South Africa's request for official reactor bids from AREVA and Westinghouse (see page 4), and French President Sarkozy's offer to Saudi Arabia to help develop nuclear power, are all a sign that global nuclear power growth is bona fide and widespread. Many hurdles remain for the 50+ countries currently considering nuclear power development, but it appears quite clear that the global nuclear family is going to expand, especially in places like Africa, the Middle East, Southeast Asia and South America, where clean and stable electric power generation has been heretofore lacking.

Along the lines of the more traditional view of fueling the renaissance, another story this past week was that Atomic Energy of Canada Ltd. entered into an agreement with the Nuclear Power Institute of China to explore reactor technology that economizes on the use of uranium (see story page 4). One motivation for this is the fact that China does not have an abundance of uranium reserves itself. In addition, China certainly sees what is going on in the rest of the world with respect to nuclear power growth, and that a competition for available resources is developing.

While the dramatic increase in uranium prices over the past several years can be taken as a sign of future scarcity of uranium supplies, it really is an indication of the inadequate investment in production capacity and infrastructure, as we've stated a number of times in these pages. Due to the abnormal development of the market and the massive inventory liquidation that took place during the 1980s and 1990s, prices were pushed to extremely low levels that discouraged exploration and development. We are suffering the consequences of that now.

This pressure on uranium prices can be extended for some time into the future as the renaissance takes off and production is called on to expand even more. But, it is primarily a flow problem (the pressures to bring new production online soon enough) and not a stock problem (the amount of uranium reserves/resources that are available for exploitation).

This does not mean that it is not prudent to pursue ways to economize on uranium use. This addresses the flow as well as the stock problem, and the less uranium you require, the less needed to expand uranium production. And, over time, the availability of uranium resources does become more of an issue, once you consider that new reactors are expected to have lives of at least 60 years.

The good news is that there are considerable opportunities to substitute technology for resources in the area of nuclear fuel, so much so that nuclear is sometimes referred to as a renewable resource. In addition to reactor technologies that use less uranium, there are improved fuel designs, more advanced enrichment technologies that allow for the greater substitution of enrichment for uranium, recycling of used fuel (as well as re-enrichment of tails), and, in the long term, fast reactors and other advanced reactor technologies that extend fuel resources. It's certainly not too early to be looking at ways to use uranium more efficiently, but over the near to medium term the focus still must be on expanding production.

Key 2007 Reactor Data

- 5 reactors with over 4,000 MWe started commercial operations
- 10 reactors with over 9,100 MWe started construction
- At least 22 reactors with about 26,000 MWe were ordered

Country Reactor Data

- 31 countries operating 440 reactors today (~375 GWe)
- 55 new potential nuclear countries (i.e. already discussing reactor development) – with more possible
- 86 total potential countries with reactors by 2050
- 55 total countries with ~630 reactors (~630 GWe) by 2030 (UxC mid-case estimate)

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