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## Nuclear revival may add Del. jobs

### Edgemoor reactor-parts plant readies for increased business

By AARON NATHANS  
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EDGEMOOR -- This cavernous machine shop is where the steel girders for the Brooklyn Bridge were built and prepared for their barge trip north.

The building is so old, the wood on the floor now feels like brick, but fresh, equally ambitious landmarks may soon rise from here: The parts for America's first new nuclear power plants in 30 years.

This is where Ahmad Amer, an Egyptian-born entrepreneur, makes replacement parts for existing nuclear power plants and new parts he ships overseas. He's been a lonely businessman for a long time, one of just three such manufacturers in this country that stayed in the business after the Three Mile Island disaster in 1979. That partial meltdown stopped nuclear construction in the United States.

His perseverance could soon pay big dividends with a new generation of nuclear power plants on drawing boards. Amer said he expects to triple his work force of 50 in the next two years or so, adding welders, engineers and office staff.

A nuclear renaissance would lead to hundreds of thousands of new jobs, he said. "This will be the answer to Obama's dream," Amer said. "He doesn't know it."

Analysts are not quite that optimistic, but say the specter of higher fossil fuel prices, taxes on carbon emissions and new safety precautions could yield a strong new crop of jobs in the labor-intensive nuclear industry.

Others wonder if investments in multibillion-dollar plants, which will include big taxpayer-backed loans, would be worth the price.

President Barack Obama has been circumspect in his support of nuclear power, saying during the campaign that nuclear deserves "a place at the table," blocking the proposed repository for nuclear waste at Yucca Mountain, and hiring an energy secretary who says he supports new nuclear construction.

But plans that were in place before Obama took office have yielded applications to the Nuclear Regulatory Commission to build 26 new reactors. One of the first could rise on the western shore of the Chesapeake Bay, where the Calvert Cliffs facility would add a third unit. It stands to become one of four projects that would divide \$18.5 billion in loan guarantees from the federal government.

The loan guarantees are important because the first new nuclear plants probably wouldn't be possible without them, said Lester Lave, professor of economics at Carnegie-Mellon University. Only after they are built will investors know how much it truly costs to put up a modern American nuclear plant and whether they are cost-effective, Lave said.

Amer Industrial Technologies expects to be part of the Calvert Cliffs project and others as a subcontractor, providing heat exchangers, piping systems, pressure vessels and other parts to companies like Alstom, Mitsubishi, Westinghouse and Areva that build components.

Nuclear power, Amer said, will flourish because it is an "alternative energy," because it emits no carbon dioxide, unlike America's top fuel for electricity, coal -- which scientists agree contributes to global warming.

Environmentalists, though, warn that creating nuclear energy leaves behind radioactive waste that must be stored so it can decompose over thousands of years. They also point to the risk of accidents like those at Three Mile Island and Chernobyl.

Today, 20 percent of electricity generated in the United States comes from nuclear power, according to the International Atomic Energy Agency. There are 104 existing nuclear power reactors in this country, a quarter of which are owned by Exelon, which has a large office in Kennett Square, Pa. Exelon owns a number of area nuclear plants, including Limerick and Peach Bottom in Pennsylvania, both about an hour's drive from Wilmington. PSEG owns three reactors across the Delaware River in New Jersey.

Japan and Germany get slightly more of their power from nuclear plants; France gets 76 percent of its power from nuclear.

Although nuclear power is considered cheap, up-front costs are substantial. Chris Gadowski, managing director of nuclear services at New Energy Finance of London, said he expects the first new U.S. nuclear power plants to cost \$6 billion to \$7 billion apiece to build.

By contrast, the Bluewater wind farm, planned off the coast of Rehoboth Beach, is expected to cost \$800 million.

"They are complex technologically sophisticated investments. You have no idea how big these things are," said Gadowski, a professor at New York University. "A six-story Swiss watch is how well-coordinated and orchestrated these things are. They're finely tuned instruments."

## Amer's nuclear beginnings

Amer has made a successful living keeping those plants ticking. Amer grew up in a small town on the banks of the Nile River and owned a manufacturing business in Cairo that made nails and stainless steel wire. It did well until the Egyptian economy buckled in the wake of the Six Day War with Israel in 1967. Soon after, he sold the factory and moved to the United States, taking with him only \$200, some jewelry and his entrepreneurial spirit.

He took a job as a plant metallurgist with Phoenix Steel, which later became Claymont Steel. He then moved to Bechtel Group Inc., where he spotted a need for a company to fabricate parts for the nuclear power industry. He opened his business in Penns Grove, N.J., in 1977, and moved to the Delaware side of the river two years later.

It was in that year, 1979, that human and mechanical error combined to cause the Three Mile Island reactor near Harrisburg to partially melt down, resulting in the leakage of contaminated cooling liquid. Amer's team was part of the cleanup crew.

Although it was never proven that anyone was hurt by the incident or its aftermath, "The whole industry got sick from it," Amer said.

As federal rules became tougher, an anti-nuclear movement gained steam. Although many projects in progress were completed, no new nuclear power plants were started in this country after the meltdown. The nuclear power movement would lose further momentum with the more serious Chernobyl meltdown in the Soviet Union in 1986, which many consider the worst man-made accident in history.

Lave said there was another factor that halted the construction of new nuclear power plants: the price.

President Dwight Eisenhower touted nuclear power as "atoms for peace" and "too cheap to meter," making it a popular new technology, he said. But only the experience of actually building the plants demonstrated how expensive it was to put them up, he said. By that point, pricing structures were in place that allowed utilities to make a higher rate of return as construction costs went up, sticking ratepayers with cost overruns, he said.

As others cashed out, Amer stayed in. As a new entry to the industry, he hadn't yet enjoyed the wealth that the veterans earned during the boom.

"I was so hungry, I said I can't quit, I can't afford it," Amer said.

## America's nuclear future

Fast forward 30 years. In recent weeks, his machine shops were filled with components for 10 giant treatment tanks for nuclear contaminated material. It's for a wind-down project for the Savannah River nuclear weapons site, constructed in the 1950s by DuPont. They'll be sent south on barges.

Amer said he's seeing a growing drumbeat of visitors from foreign companies visiting his offices as plans for new U.S. plants develop. Officials from Mitsubishi were there last week, he said.

The Calvert Cliffs project is bringing in visitors from abroad, too.

A new reactor would be built by UniStar Nuclear Energy in Baltimore, a new partnership of Constellation Energy and the EDF Group of France. EDF has built 58 reactors in France over the last 20 years, and the Calvert addition would draw upon that experience with a modern, simplified pressurized water reactor design with multiple safety precautions, including double containment of the reactor building. The plant is located about 50 miles upwind of Sussex County.

UniStar officials say they're waiting to hear whether they will receive the federal loan guarantee before they proceed; they're also seeking financing from the French government. UniStar says the project, should it receive U.S. permits, would create up to 4,000 construction jobs and about 400 permanent jobs when it opens. The \$9.6 billion facility's projected start date is 2016.

There will be more work than workers trained to do it, Amer said. Nuclear sites will train and bring in people from other parts of the country, he said.

Lave said Amer's prediction of hundreds of thousands of jobs may prove fleeting since they're mainly in construction, but "it's a lot of jobs," and the plants might still be the most cost-effective option for producing new electricity.

Gadomski said nuclear is making a comeback largely because of global warming concerns and energy security. China, one of the biggest producers of carbon dioxide pollution, is making a strong move to nuclear as a result of all of the criticism, he said. Companies that rely too much on fossil fuels risk "becoming a pariah in your shareholders' and consumers' eyes," he said.

## Energy not waste-, error-free

Despite nuclear's carbon-free status, many environmental activists have problems with it.

Bill Zak, co-founder of Citizens for Clean Power, said the waste problem doesn't exist with solar or wind. Without the Yucca Mountain repository in Nevada, there's no place to put the waste but on the sites where it was created, leaving even the best protective casks vulnerable to earthquakes or another "profound disturbance," Zak said.

Nuclear power plants are still subject to human error, Zak said. "One mistake is one mistake. That's all it takes to have massive repercussions," he said.

Gadomski said advances are being made in ways to process the radioactive waste into something safer, although it's not cost-effective yet.

The billions of dollars that go into a nuclear power plant could be spent better in other ways, including making homes more energy-efficient, said Doug Koplou, president of Earth Track Incorporated, a Cambridge, Mass.-based consulting firm. Recent plant constructions in Europe have resulted in big cost overruns, he said.

"I think nuclear power is not economic without government subsidies," Koplou said.

Much of any nuclear renaissance would hinge on the ability of companies to pay for the construction. Despite its status as a nuclear power leader, Exelon has said it will wait to bid on new nuclear licenses, citing problems getting loans that big.

PSEG, which owns two reactors at its nuclear plant in Salem, N.J., plans to wait until next year to make an early filing with the federal government for a proposed additional reactor, said company spokesman Joe Delmar. The reasons for the wait, he said, include the economy, availability of raw materials, and the fact the federal government hasn't approved any particular nuclear power plant designs.

But PSEG plans to submit requests to keep its existing reactors running for 20 more years after the licenses expire in 2016 and 2020, he said. PSEG also owns the nearby Hope Creek nuclear plant. Its license expires in 2026.

Meanwhile, Amer is betting on new plants going forward, looking for his "A-team" to make peerless parts. He plans to hire 50 welders by the end of the year, and he said he might contract with local machine and blade cutting shops to contribute.

"We want to build a team that can really understand loyalty," he said. It may have once been acceptable to cut corners, but as far as the nuclear industry goes today, it's too important to have high-quality manufacturing in the United States."

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