

Nuclear Industry Futures

Grid Reliability at Risk as Nuclear Plants Priced Out of Energy Markets

June 12, 2016-With its iconic cooling towers and the enduring legacy of a 1979 accident there, the Three Mile Island power plant south of Harrisburg represents to many the face of nuclear power in Pennsylvania. Its latest struggle to compete in wholesale electricity markets, which puts its operation into the next decade in jeopardy, highlights a trend that threatens grid reliability and the future of the country's nuclear fleet, observers say. Nuclear power, with its heavy regulation and higher capital costs, is being priced out of markets by cheaper natural gas and subsidized solar and wind. "It's a quandary not only for the nuclear industry, but for regulators like us," said state Public Utility Commissioner Robert Powelson, who is part of a growing group raising concerns about the implications of retiring nuclear plants without a reliable, carbon-free alternative that can provide the same baseload capacity to the grid. "When that reactor shuts down, it's not coming back online," he said. "There is certainly a need to have an adult conversation around the viability of these units." Operators and regulators have voiced concerns about that viability for some time. Years after some analysts predicted a boom in reactor building, only five are under construc-

tion in the United States, with few on the drawing boards. Meanwhile, closure notices and warnings are building. A year after closing its Vermont Yankee nuclear plant, New Orleans-based Entergy Corp. said last fall it would close its Pilgrim station in Massachusetts and its James A. FitzPatrick plant in New York, citing high costs and tough competition. Chicago-based Exelon Corp. announced the early retirements of two Illinois plants, one of which failed to clear regional grid operator PJM Interconnection's auction last month to provide capacity power in 2019-20. The annual auction sets payments to power plants that agree to operate and provide baseload electricity to the grid in case demand suddenly rises. Because nuclear plants are large and designed to run for 18 months at a time, they have traditionally served that baseload role, especially as stricter environmental rules push coal plants to close. Three Mile Island — operated by Exelon — failed to make the cut in its second consecutive capacity auction,



(Cont. on Pg. 7)

Inside this issue:

Grid Reliability at Risk as Nuclear Plants Priced	1, 7
Fort Calhoun Nuclear Power Plant to Close by Year-end	1, 3
Exelon to Close 2 Illinois Nuclear Plants	2
30 Years After Chernobyl Disaster, shelter Nears Completion	3
Challenges could continue to sweep nuclear industry	4, 5
Watts Bar Unit 2 produces electricity for the first time	5
Australian Royal Commission delivers final report	6
The Nuclear Picture Overseas: Japan Returns, China Ramps Up	7, 8
NWI Products & Services	8
Fort Calhoun never feared its nuclear plant, but now it fears its loss	9, 10
NWI News Board	11

Fort Calhoun Nuclear Power Plant to Close by Year-end

June 16, 2016-The Omaha Public Power District (OPPD) board of directors voted unanimously on June 16 to close Fort Calhoun Station, the smallest nuclear power plant in the U.S., due to economic reasons. In April, OPPD Board Chairman Mick Mines asked senior management to develop potential scenarios regarding future power resources. Tim Burke, president and CEO of OPPD, recommended closure of the plant dur-

ing the board's May meeting, but the board chose to review the proposal for a month before making a decision.

With today's vote, Fort Calhoun becomes the twelfth U.S. nuclear unit to close or announce plans to close since October 2012. Many of the plants have been small, single-unit facilities facing economic difficulties similar to Fort

(Cont. on Pg. 3)

Exelon to Close 2 Illinois Nuclear Plants

June 2, 2016- Exelon, a leading competitive power provider, plans to shut two money-losing nuclear plants in Illinois, the company said Thursday, after efforts to push a bailout through the state's Legislature fell apart. The company will close the Clinton Power Station in Clinton next June and the Quad Cities Generating Station in Cordova in June 2018. Slowing demand for electricity and a flood of cheap natural gas have driven down the price of power, and the two plants, like others in the aging system across the country, have struggled to compete in wholesale markets. The two Exelon plants lost \$800 million over the last seven years, the company said. "We have worked for several years to find a sustainable path forward," Chris M. Crane, Exelon's chief executive, said in a prepared statement. "Unfortunately, legislation was not passed, and now we are forced to retire the plants."



The announcement comes as the Obama administration and state and federal lawmakers are suddenly working to help support the flagging industry as part of the effort to reduce carbon emissions and stem global warming. Nuclear plants produce the country's largest share of electricity without emitting carbon dioxide and can operate as needed. Their proponents are pursuing different ways to maintain the plants despite unresolved questions over waste disposal, safety and the potential for converting their operations to make weapons.

Supporters of the Exelon bailout argued that the plants were important not only to the effort to reduce greenhouse gas emissions but also to supporting thousands of jobs. But many opponents of the bailout — both some who support the use of nuclear energy and some who do not — say the public has already paid for the plants and should not have to again. And they say the company, which took in \$34.5 billion in revenue last year, can afford to keep the plants open.

Executives at the company, which operates a dozen other nuclear plants in six states, ultimately disagreed and said they would continue to push for the new regulations. The closings could put as much as \$1.2 billion in annual economic activity and as many as 4,200 direct and indirect jobs at risk, including 1,500 plant workers, the company said, but employees may be able to transfer to positions elsewhere in the company. Industry executives and supporters of the bailout bemoaned the shutdowns.

"The premature closures of Clinton and Quad Cities continue an alarming trend — our nation is losing top-performing nuclear power plants due to flawed electricity market conditions," said Marvin S. Fertel, chief executive of the Nuclear Energy Institute, an industry trade group. "In the process, we are moving farther away from achieving our nation's ambitious clean air commitments."

Evan Bayh, a former Democratic senator and governor from Indiana who is co-chairman of Nuclear Matters, which promotes the technology's use for energy, said Illinois gets 92 percent of its carbon-free electricity from nuclear sources. "The absence of Clinton and Quad Cities will make it near impossible for the state to reach its carbon reduction goals," he said. Opponents of the bailout said the company had only itself to blame. "Illinois ratepayers and the Illinois General Assembly are not to blame for the closing of these plants," said Lisa Madigan, the state's attorney general. "Unfortunately, a highly profitable company is choosing to close plants because it hasn't received a blank check to impose unfair and unnecessary rate hikes on Illinois consumers."

(New York Times, Business Day, By DIANE CARDWELL)

Fort Calhoun Nuclear Power Plant to Close by Year-end

(Cont. from Page 1)

Calhoun. But the recently announced closure of Quad Cities station, an 1,871-MW dual-unit facility in Illinois, demonstrates that current market prices—driven low by the abundance of natural gas in the U.S.—can affect any size nuclear plant.

U.S. Secretary of Energy Ernest Moniz acknowledged that economic trials are facing nuclear plants during a May 19 summit on “Improving the Economics of America’s Nuclear Power Plants.” Moniz said, “When this fleet of reactors was built, it was a very different market structure. It’s that change of market structure that has posed at least many of the challenges.” The Omaha World-Herald reported that it had conducted analysis of OPPD’s financial information and found that electricity supplied by the plant cost more than \$71/MWh in 2015. The cost is substantially higher than the roughly \$20/MWh that OPPD can buy and sell power for on the open market. According to the plan approved by the board, Fort Calhoun will cease commercial operations by December 31, 2016. OPPD will begin the decommissioning process this year using the SAFSTOR methodology, which places the facility in a safe, shutdown condition, allowing radioactive elements to decay over time. Using this method, owners have up to 60 years before the site must be decontaminated to levels that permit release for unrestricted use. In the short-term, OPPD plans to replace Fort Calhoun’s capacity by extending operation of its North Omaha Units 1, 2, and 3 through at least 2018 and purchasing capacity from other Southwest Power Pool participants. An integrated resource plan will be utilized in the long-term to finalize capacity replacement options. “This has never been about employees. It’s never been about our partners. It’s been about a facility that has an economy-of-scale issue, has market forces that are fighting against it, that’s creating the current situation that we’re in,” said an emotional Burke (Figure 1) before the vote was taken. “It is what it is.”

(By Aaron Larson, POWER)



30 Years After Chernobyl Disaster, Shelter Nears Completion

Inside and out, the arch is covered in stainless steel, and dehumidified air will be circulated around the structure’s steel trusses to prevent rust. Credit European Bank for Reconstruction and Development

On the night of April 26, 1986, engineers at the Chernobyl nuclear plant in what was then Soviet Ukraine performed a safety test at the plant’s No. 4 reactor. It did not go well. In a matter of seconds, power inside the uranium-and-graphite core of the reactor surged out of control, setting off a steam explosion that was followed by a fire that spewed radioactive particles into the atmosphere. By official Soviet accounts several dozen plant workers and firefighters died in the immediate aftermath. Thousands more were sickened by radiation, over the short and long term. The surrounding countryside, contaminated by radioactive fallout, was declared off limits to anyone without a pass to get through security checkpoints.

On the 30th anniversary of the accident, access within the 18-mile exclusion zone, which includes the abandoned city of Pripyat, is still restricted. But at the plant itself, things are looking up. An arched shelter designed to enclose the radioactive remains of the destroyed reactor is nearing completion.

The arch, called the New Safe Confinement, is being built — at a cost of at least \$1.7 billion — to last 100 years. Inside, the radioactivity levels will be so high that normal maintenance, like painting, will not be possible. So inside and out, the arch is covered in stainless steel, and dehumidified air will be circulated around the structure’s steel trusses to prevent rust. It was built several hundred yards from the destroyed No. 4 reactor, and later this year will be slid in place over the reactor building. That will eliminate one of the greatest risks that still exists at Chernobyl: a structural collapse that could raise a cloud of radioactive dust and spread more contamination across Ukraine and into Western Europe.

But it will also mark the start of a new phase in coping with what is generally considered the world’s worst nuclear power disaster. Inside the arch will be a heavy duty crane and other remote-operated equipment to be used to start removing the crumbling radioactive fuel that remains in Unit 4. It will not be an easy task. There is a lot of fuel — 195 tons, by one estimate — along with tons of lead, sand and other materials that were dropped on the reactor by helicopter in a desperate effort to extinguish the fire. It all melted together into a lethal lava-like substance that poured through pipes and holes in the structure and solidified. The government of Ukraine will be responsible for the work, and it is unclear where the money will come from to pay for it, or for a repository that will be needed for the fuel and other highly radioactive waste. It may take much more than another century before the mess started in a few seconds 30 years ago is fully cleaned up.



Challenges could continue to sweep nuclear industry

June 6, 2016 - Quad-Cities Generating Station and Clinton Power Station — are on the chopping block now, but company officials say that without legislative reform, other nuclear plants could face the same fate. The challenging electricity market conditions facing Exelon in Illinois are an issue sweeping the nuclear industry and prompting other states to consider energy reform. "We see Quad-Cities and Clinton as the economically challenged plants today. But if these two plants go away and you don't resolve the problem, the problem just moves to two new plants," said Bill Stoermer, Exelon spokesman for the Quad-Cities station in Cordova. "This is an issue not just for Exelon and not just Illinois, but across the country." For Exelon, he said, "Three Mile Island (in Pennsylvania) and Byron (in Illinois) could be the next two plants in the fleet to be discussed as 'economically challenged.'" Like Quad-Cities and Clinton, the Byron plant has struggled to clear its energy auctions, which is the process by which producers sell their energy to the market. In the latest energy auction with PJM Interconnection LLC, a regional transmission organization, not all of Byron's capacity cleared the auction's price, he said. The Byron plant also faces many of the same challenges that led to Exelon's announcement last week that it will begin the process to shut down Clinton in 2017 and Quad-Cities in 2018. The decision came after a proposed Next Generation Energy Plan failed to get out of Illinois Legislature's regular spring session.

"The markets are unfair, unequitable, and we can't compete in a fair manner because of subsidies (provided to renewable energy)," Stoermer said. "We've also seen a decline in energy market prices due to the price of natural gas being at historic lows, which has negatively affected the market price of electricity." The energy price issue is not unique to Illinois and is one other states are grappling with amid similar market conditions. New York and Connecticut are considering legislation similar to the proposal in Illinois. "It is very similar legislation in New York, but it appears it has great support up to and including the governor because of the similar market situation in New York," Stoermer said. The New York Clean Energy Standard, proposed by Gov. Andrew Cuomo, outlines goals for reaching 50 percent renewable energy by 2030. The plan, which recognizes nuclear energy as a means of achieving the goal, includes provisions for zero-emission credits that would benefit upstate nuclear plants. In Illinois, Exelon has been pushing for approval of the Next Generation Energy Plan. The company says the environmentally friendly energy plan could position Illinois as a premiere state in zero-emission, carbon-free electricity. Exelon, which has six nuclear plants in Illinois, has worked several years to get the state to pass energy reform legislation. It has said change is necessary to put nuclear energy on a level playing field with subsidized renewable energy. But critics have called the proposed legislation a "bailout" for a profitable company. "This is no bailout," Ken Ohr, Exelon's Quad-Cities plant manager, told a group of retirees gathered at the plant Friday. "It creates a level playing field, an equal opportunity to sell our power in Illinois." The Quad-Cities and Clinton plants have had a combined loss of \$800 million in the past seven years, Exelon has reported. Exelon has argued that the subsidies that renewable energies receive give it a market advantage and drive down power prices. "Many days, the market price is considerably less than the operating costs of Quad-Cities station," Stoermer said. It costs about \$30 a megawatt to operate the Cordova plant, but many days, the energy market price is much less than that. For example, the market price last Thursday was less than half of its break-even point. "No one was making money that day," he said at the retiree meeting. The Quad-City plant will lose \$140 million in the next year "if we don't get legislation," he said. In addition, Exelon is facing competition from generators in states surrounding Illinois that operate in a regulated market and bid into the Illinois market. "They are able to pass their operating costs onto consumers," Stoermer said. "In a deregulated market, like Illinois, the utility is responsible for all operating costs." National nuclear officials have been expressing concern for the industry's future. "The premature closures of Clinton and Quad-Cities continue an

Challenges could continue to sweep nuclear industry

(Cont. from Page 4)

alarming trend — our nation is losing top-performing nuclear power plants due to flawed electricity market conditions," Marvin Fertel, president and CEO of the Nuclear Energy Institute, said in a statement after Exelon announced it was taking steps to close the plants. "In the process, we are moving farther away from achieving our nation's ambitious clean air commitments," he said. According to the institute, which develops policy on legislative and regulatory issues affecting the industry, the Quad-Cities and Clinton facilities prevent the emission of more than 20 million metric tons of carbon dioxide every year. That is the equivalent of taking nearly 5 million cars off the road. Nuclear Matters co-chair, former Sen. Evan Bayh, D-Indiana, offered a similar reaction, saying it "is yet another unfortunate reminder of the challenges that well-functioning existing nuclear plants face, and the urgency that is needed for policymakers to implement solutions that keep these plants open." "Our clean energy future depends on it, in Illinois and across the country where nuclear makes up the majority of our carbon-free energy mix," he said.

Exelon went to work on developing the proposed Next Gen plan after an initial Low-Carbon Portfolio Standard bill, introduced in 2015, failed to get approval in the state Legislature. "We have worked for several years to find a sustainable path forward in consultation with federal regulators, market operators, state policymakers, plant community leaders, labor and business leaders as well as environmental groups and other stakeholders," Exelon President and CEO Chris Crane said in a news release announcing the plants' early retirements.

Exelon vowed to continue its effort to push for reform to promote zero-carbon energy, create and preserve clean-energy jobs and establish a more equitable utility rate structure. "Whether these two plants stay in operation or not, reform is still needed," Stoermer said.

(Jennifer DeWitt, QC Times, jdewitt@qctimes.com)

nwi

WATTS BAR UNIT 2 PRODUCES ELECTRICITY FOR THE FIRST TIME



June 04, 2016 —KNOXVILLE - The Tennessee Valley Authority's Watts Bar nuclear Unit 2 generated electricity on its own power grid for the first time on June 4, 2016. TVA authorities say reactor operators have also begun a test run of power generating equipment. "This is another major step in fully integrating Watts Bar Unit 2 as the seventh operating unit in TVA's nuclear fleet," said TVA Chief Nuclear Officer Joe Grimes. "It is rewarding to see TVA taking the lead on delivering the first new nuclear unit of the 21st century and providing

safe, affordable and reliable electricity to those we serve."

Once complete, the reactor is expected to provide power to more than one million homes in the Tennessee Valley, when combined with the power already produced by Watts Bar Unit 1. TVA says the next step in making Watts Bar Unit 2 fully functional is full-plant testing. Crews will slowly increase power levels up to 100 percent to make sure the reactor is functional. Those tests will be performed several times. They expect the reactor to be ready for full-power operation later this summer.

(WBIR, Knoxville, TN)

nwi

Australian Royal Commission delivers final report



May 9, 2016 - South Australia's Royal Commission into the Nuclear Fuel Cycle has delivered its final report, recommending that the government should pursue the establishment of storage and disposal facilities for multi-national used nuclear fuel and intermediate-level waste. The announcement has been greeted as a fundamental change in the global nuclear waste discourse. The 344-page report is the culmination of a process formally launched in March 2015 and costing a total AUD7.2 million (\$5.3 million). The commission was tasked with undertaking an independent and comprehensive investigation into the potential for increasing the state's participation in

the nuclear fuel cycle across four areas of activity: exploration and extraction of minerals; the further processing of minerals and manufacture of materials containing radioactive substances; the use of nuclear fuels for electricity generation; and the storage and disposal of radioactive and nuclear waste. It was presented to the South Australian government on May 6 by Kevin Scarce, who led the independent commission. The commission committed to conduct an independent, evidence-based process that was open and transparent. During its investigations, it produced issues papers inviting submissions on the risks and opportunities associated with each activity in the nuclear fuel cycle. Public sessions, which heard oral evidence from 132 expert witnesses, were streamed live over the internet. The commission also conducted its own research, and visited fuel cycle facilities in Asia, Canada, Europe, the United Arab Emirates, the UK and the USA. The commission's Tentative Findings were published in February 2016, followed by a further five weeks of public consultations. The final report makes 12 key recommendations for the deepening of South Australia's involvement in the nuclear fuel cycle. It draws particular attention to the prospect of establishing a facility for the disposal of international used nuclear fuel and intermediate waste, finding that the state "has the necessary attributes and capabilities to develop a world-class waste disposal facility, and to do so safely". Based on a "cautious and conservative approach", from assessments of used fuel inventories and potential global interest the commission determined that such a facility could generate more than AUD100 billion in income in excess of expenditure (including a reserve fund of AUD32 billion for facility closure and ongoing monitoring) over the 120-year life of the project. Recognizing that social consent will be vital for any repository project to proceed, it also recommended that the South Australian government remove legislative constraints to ongoing discussion on such a facility. "The immediate next steps should be undertaken free from any debate about whether expenditure of public money in pursuing this opportunity is contrary to law," the report notes.

The commission found that it would not be commercially viable to develop a nuclear power plant in the state under current market rules, but noted that as "a low-carbon energy source comparable with other renewable technologies", nuclear may be required in the future. It therefore recommended that the South Australian government should "pursue removal at the federal level of existing prohibitions on nuclear power generation to allow it to contribute to a low-carbon electricity system, if required". It also called for the removal at the federal level of prohibitions on the licensing of fuel cycle facilities, although it noted that in a currently oversupplied market the provision of such services would not be commercially viable in the next decade. Expanded uranium exploration and mining would benefit the state, the commission noted, but found the existing regulatory approvals processes for new uranium mines to be "unnecessarily duplicative at the state and federal levels". The commission has recommended the government pursue a simplification of state and federal mining approval requirements for radioactive ores, to deliver a single assessment and approvals process. It also recommends steps to maximize the benefits to the state from expanded uranium exploration and mining, while ensuring that full decommissioning and remediation costs for uranium mining projects are secured in advance. South Australian premier Jay Weatherill thanked Scarce and his team for their work in putting together the report, which he said marked the start of a "very important conversation" about the state's future. "The Royal Commission has found that it is both safe and viable to pursue a used fuel waste storage facility, and this would have extraordinary economic benefits for South Australia. The Commissioner has also found that without broad social and specific community consent, such a proposal would not be achievable," he said. A community engagement process on the report's findings will be unveiled "in the coming days", with its outcomes helping to inform the government's response to the report. That response will be delivered to the South Australian parliament by the end of the year.

The World Nuclear Association said that the report had "fundamentally changed the nature of the global nuclear waste discourse". The London-headquartered organization's director general, Agneta Rising, said that if constructed, a multi-national waste facility based in South Australia would provide a welcome option for countries operating nuclear facilities today. "Far from it being the case that there is 'no solution' to nuclear waste, we are seeing lots of progress - with some countries developing national repositories and now the potential addition of this viable alternative," she said. Such a large multi-national waste storage facility would be a world-first and should offer advantages in terms of siting and economics when compared to smaller national approaches. Rising added: "Other governments, both inside and outside of Australia, which are considering introducing nuclear energy could really benefit from the wealth of high quality information that has been collected through the rigorous South Australian Royal Commission process." The Minerals Council of South Australia also welcomed the report, saying that the commission had "comprehensively validated the global nuclear industry and its importance in providing affordable, low-emissions electricity to an energy-scarce and emissions-constrained world". It called on both state and federal governments to "heed the call by this Royal Commission for regulatory reform to enable an expanded uranium and potential nuclear industries to flourish."

(Researched and written by World Nuclear News)

Grid Reliability at Risk as Nuclear Plants Priced Out of Energy Markets

(Cont. from Page 1)

leading the company to say, “If we do not see a long-term path to sustainable profitability for a particular unit, we will consider all options, including unit shutdown.” The news from the sector has turned up the volume of concern, leading lawmakers and regulators to call for discussions on what to do. “I believe that the clean, reliable energy generated by nuclear plants and the impact the loss of these plants may have on the electric transmission grid requires continued investigation and an exploration of any and all options available to the commonwealth to assure grid reliability,” Rep. Robert W. Godshall, R-Montgomery County, chair of the House Consumer Affairs Committee, wrote in a legislative memo last week. Powelson and others note that nuclear has been left out of programs that encourage carbon-free power, such as the state's Alternative Energy Portfolio Standards (AEPS) Act of 2004, which requires utilities to source their power from a growing share of renewables. “It's not an even playing field,” said Kevin Sunday, director of government affairs at the Pennsylvania Chamber of Business and Industry. He and others acknowledged the lower wholesale price of electricity coming from natural gas and subsidized renewables benefits consumers. But the market setting that price does not acknowledge that nuclear helps utilities and states meet stricter limits on greenhouse gas emissions. “What if there's a Clean Power Plan and we don't have nuclear units to get us to compliance?” Powelson asked, referencing a pending federal program that could require Pennsylvania to cut its carbon emissions by a third. As the country's second-biggest nuclear state behind Illinois, state officials are counting on the nuclear fleet to help them meet such requirements. Godshall's memo said his committee will examine complaints that the AEPS artificially picks “winners and losers.” Utilities have pushed for rule changes in other states to push some of the added cost of operating large plants to ratepayers.

Exelon sought that in Illinois, and Akron-based FirstEnergy has fought for it in Ohio. The company operates coal and nuclear plants in the region, including the two-reactor Beaver Valley plant in Shippingport. FirstEnergy does not comment on how plants perform in the capacity auctions and has made no announcements about closing plants, but it shares industry concerns, said spokeswoman Jennifer Young. “We agree that a significant number of power plants, including nuclear stations, are at risk of early retirements,” she said. “Environmental mandates and energy markets don't put a unique value on nuclear and what they bring to market.”

(Written by David Conti ,Tribune-Review. dconti@tribweb.com)



The Nuclear Picture Overseas: Japan Returns, China Ramps Up Aggressively

June 6, 2016 - For going on 40 years, the nuclear energy industry has often found itself on the defensive in the United States. The partial meltdown of the Three Mile Island plant in Pennsylvania came less than two weeks after the release of the 1979 movie, “The China Syndrome,” which told a story about safety cover-ups at a fictitious California facility. The disaster in Russia 30 years ago at Chernobyl and the accident at Fukushima after a tsunami hit Japan in 2011 as a result of a magnitude 9 earthquake has kept large segments of the public wary, especially in a seismically active area like California. “One thing you've proven in California is if you build a nuclear plant, you'll probably find an earthquake fault,” said Rochelle Becker, executive director of the Alliance for Nuclear Responsibility in San Luis Obispo. After shutting down nuclear facilities after Fukushima, Japanese Prime Minister Shinzo Abe has brought nuclear power back after the country had to rely on fossil fuel energy that proved much more expensive. “Our resource-poor country cannot do without nuclear power,” Abe said At a news conference in March. Abe's decision has prompted protests and lawsuits. China has been aggressively expanding its nuclear energy sector. No other country in the world has more civilian nuclear power stations under construction. Last month, a state-run newspaper reported that a Chinese corporation plans on constructing floating nuclear power plants to deliver electricity. Anxious to wean itself away from coal, China has a team of researchers and engineers at the Shanghai Institute of Applied Physics working on molten-salt reactors. Instead of using solid fuel rods, molten-salt reactors use liquid, rather than solid fuel rods, as its fuel to generate electric-

(Cont. on Pg. 7)

The Nuclear Picture Overseas: Japan Returns, China Ramps Up Aggressively

(Cont. from Page 7)

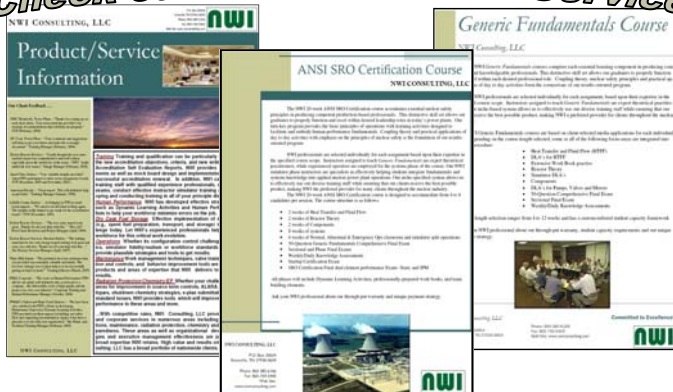
ity. The program has collaborated with Tennessee's Oak Ridge National Laboratory to move the technology along. "They're going to demonstrate it for 10 years before they try to sell it," said Michael Shellenberger, who founded Environmental Progress, an organization that supports nuclear power. The picture in Europe is mixed. After Fukushima, German Chancellor Angela Merkel spearheaded legislation to essentially shut down nuclear power, which provided 26 percent of country's electricity. Germany's "Energiewende" program has focused on cranking up renewable sources such as solar and wind. But while nuclear has been disappearing, Germany is producing 43 percent of its electricity by burning coal. France has long used nuclear power as its dominant source of electricity but French President Francois Hollande recently announced a proposal to boost renewables and shut down aging nuclear plants, moves that could cut the country's nuclear mix from 75 percent to 50 percent by 2025. Eager to close all of its coal-fired power plants, the government in Great Britain wants to build two reactors at Hinkley Point, on the southwest coast of England. "We have a technology that enables that," said Fiona Rayment, director of fuel cycle solutions at the U.K.'s National Nuclear Laboratory to the Union-Tribune while attending a nuclear conference in San Francisco April 18. "You talk to a lot of people in the U.K. right now and they absolutely see nuclear as part of the energy mix." But Hinkley Point has been hobbled by engineering problems and construction delays. The U.K. has agreed to significant carbon dioxide emissions reductions — 80 percent by 2050. California has its own ambitious climate goals, including Senate Bill 350 that mandates 50 percent of the state's energy to come from renewable sources by 2030. That, nuclear's proponents say, offers the industry an opportunity to highlight its clean air attributes, especially to a younger audience worried about global warming. "We are seeing a lot of young people who are more comfortable with technology," said Josh Freed, vice president for the clean energy program at Third Way, a think tank that bills itself as politically centrist. Gen Xers and millennials, born and raised amid laptops and iPhones, may be more willing to give nuclear power a chance, the thinking goes. "They come to the conclusion," Freed said, "that nuclear has to be part — not the entire — but part of the solution to climate change." Freed acknowledged the evidence of a youth movement for nuclear is anecdotal. Kathryn Phillips, director of Sierra Club California, said she's not seeing it. "The younger people who are working with us," Phillips said, "they want renewable energy" from wind and solar.

(THE SAN DIEGO UNION-TRIBUNE By Rob Nikolewski)



NWI Products and Services

Check out our Products & Services



NWI Consulting, LLC is a professional consulting firm specializing in power generation performance improvement services, specialized learning interventions, computer-based training, organizational development, accreditation renewal/recovery, and professional staff augmentation. NWI has a broad portfolio of U.S. and international clients in the electric generation industry and is headquartered in Knoxville, TN. NWI's power plant services includes supporting such areas as Operations, Training, Outage Management, Nuclear Oversight, Maintenance, Radiation Protection, Chemistry, and Emergency Preparedness. NWI has assisted clients in other, more specialized efforts including Leadership/Management Development, Executive Coaching, Conflict Resolution, Multi-Discipline Assessments, Root Cause Analyses, Performance Improvement, NRC 95-002 & 95-003 and

nwi Consulting, LLC

PO Box 33117, Knoxville, TN 37930

Office: (865) 385-6166 Fax: (888) 817-8890

Website: www.nwi-llc.com

Fort Calhoun never feared its nuclear plant, but now it fears its loss

May 15, 2016 - Fort Calhoun sits between the nuclear plant and Omaha 35 miles to the south, where most of the workers reside. The town experienced a boom time soon after ground was broken for the plant in February 1968. Living just down the road from a nuclear power plant has long been part of the fabric of life in this town of 900. The shrieking tests of the emergency sirens, always at 10 a.m. on the first Tuesday of each month. The evacuation plan and map that would arrive each year stuffed inside the new phone book. But people in Fort Calhoun, the town of Blair nearby and surrounding Washington County have never really feared living under the cloud of nuclear power. Longtime Fort Calhoun resident Judy Rohwer laughed last week recalling how a relative who lives miles from the San Andreas Fault in California once asked her how she could live near a nuclear plant. Rather, people here for decades embraced and reaped the benefits of Fort Calhoun Nuclear Station. Those benefits have included hundreds of local jobs as well as the daily stream of workers' cars from Omaha so thick and unbroken that at certain times of day you can barely cross the highway. But all of that may soon be coming to an end with last week's announcement that Omaha Public Power District is looking to shut down the plant by the end of the year. Ironically, a source of energy that was once touted as "too cheap to meter" is now said by OPPD to be simply too costly to produce. Now the town that never feared nuclear fallout is instead worrying about the other kinds of fallout the closure will bring. Of greatest concern are the plant's nearly 700 workers — about 150 of whom live in the immediate area — and their families. With many jobs at the plant unique to the nuclear power industry, it could prove difficult for workers to find other jobs here. There's also concern for loss of the thousands of dollars that workers spend on Main Street. "Economically, I would guess it's been the biggest thing that's ever happened to the town," said Joel Swanson, the third-generation owner of Calhoun Oil gas station. Above all, there's sadness that an institution that has created a way of life around Fort Calhoun over the past half-century could soon be coming to an end. "I left about half my soul up there," said Roger Frakes, a local resident who worked nearly three decades at the plant. When people in Omaha hear the words "Fort Calhoun," images of nuclear power — and perhaps thoughts of nuclear catastrophe — come to mind. But that's never been the way people in Fort Calhoun identify their town. The Missouri River hamlet can trace its roots to Lewis and Clark days and to historic Fort Atkinson, an 1820s outpost just east of town. Fort Calhoun embraces that heritage with murals on Main Street and its high school's Pioneers nickname. However, there's no doubt the town's future changed forever in October 1965. That's when OPPD's managers selected a 382-acre site along the river five miles north of town for its first foray into the atomic age. The plan quickly became the talk of the town. "You can't spend that amount of money without the town getting some good from it," the local postmaster said then.

The plant along U.S. 75 is actually slightly closer to Blair, the much larger county seat, than to Fort Calhoun. But OPPD would name the facility Fort Calhoun Nuclear Station, said to have come about because one of OPPD's board members hailed from Fort Calhoun. The town also sat between the plant and Omaha, the city some 35 miles to the south where most of the workers would come to reside. At the time it was planned, Fort Calhoun was part of a major push nationally into nuclear power, widely seen as a safe and cheap energy source for the nation's future. There was little to no controversy about the plan or the site selected. Nuclear power at the time just didn't raise the kinds of alarms it would later. Ground was broken on a blustery February morning in 1968, one of the shovels used that day is housed in Fort Calhoun's Washington County Museum. The biggest boom time soon followed, as hundreds of construction workers poured into town to erect the plant. "It was quite a circus," recalled longtime resident Kevin Burns. "The restaurants and bars just flourished." The plant would play a big role as Fort Calhoun's population spiked more than 40 percent between 1960 and 1970, from about 450 to 650. Washington County as a whole added more than 1,200 residents during that time. The first sustained nuclear reaction at Fort Calhoun was marked at 5:47 p.m. on Aug. 5, 1973. Within nine months the plant was up to full power, at the time providing more than half of OPPD's total energy load. Frakes became one of the plant's first employees, assigned badge No. 93. Having transferred in from OPPD's north Omaha coal plant — a grimy place filled with ash, dust and smoke — he couldn't believe how clean and quiet the new plant was. "It was just like a new car," said Frakes, who would go on to a career as a steamfitter, foreman and maintenance planner at the plant. To Frakes, what was best about the plant was his co-workers — talented people who were as serious as they needed to be but still lighthearted

Fort Calhoun never feared its nuclear plant, but now it fears its loss

(Cont. from Page 9)

and fun to be around. While Fort Calhoun would go on to provide decades of solid service to Omaha-area electric ratepayers, the bloom quickly fell off nuclear power. Most of the plants built nationally around that time came in well over budget, and Fort Calhoun was no exception. It cost \$178 million, more than \$100 million above the initial estimate. Then came the 1979 near-meltdown at Three Mile Island in Pennsylvania. The incident created a cloud of public fear over nuclear power and led to a significant increase in safety regulations and safeguards within plants. Still, even Three Mile Island sparked little concern of nuclear disaster around Fort Calhoun. Residents at the time expressed confidence in the plant's safety — a feeling that persists to this day. Fort Calhoun residents know splitting atoms is serious business. Stan Karas last week recalled a time inspectors plucked vegetables out of his family's garden, part of the plant's radiological testing program. But residents say they've always been informed about even the slightest incident at the plant and have well understood its abundant and redundant safety features. "You just never hear any concerns about it," said Mitch Robinson, Fort Calhoun's mayor. "We all have friends and family working out there. We know it's safely operated." So residents haven't given a second thought when the sirens are tested. "We have one right outside our house," said Fort Calhoun's Sandy Grove. "The dogs always run." And the locals have always found it amusing when people from outside the community question their sanity for living near the plant.

But few around Fort Calhoun were laughing on Thursday, when OPPD CEO Tim Burke announced he was recommending closing the plant. The utility's board is expected to vote on it in June. In the big picture, the plant is falling victim to the power industry's changing economics. For years OPPD ratepayers benefited when the utility sold its surplus nuclear and coal-fired power on regional energy markets. But due to an abundance of natural gas brought on by fracking, cheap electricity fueled by gas in recent years has flooded the energy market. There's also now a surplus of cheap wind energy available when the wind is blowing on the plains. Nonetheless, the announcement came as a shock to most residents. They point out that the utility has spent big money — more than \$200 million — getting the plant back up and running in the wake of the 2011 Missouri River floods. There's even construction going on now, a project moving the emergency electrical generators closer to the highway, away from the river. But Frakes, the former employee, said he wasn't surprised by the news. Several other plant closures have been announced nationally in recent months. And Frakes knows Fort Calhoun is the nation's smallest nuclear plant, not able to take advantage of economies of scale. Frakes has a friend who works at a nuclear plant in Arizona that Frakes says produces nearly 10 times as much power with only three times the workforce as Fort Calhoun.

"I understand the number crunch, I really do," he said. But it doesn't make the news any less painful.

"These people are part of our neighborhoods and our friends," said Sandy Kucera, who owns a wine, antiques and gift shop in Fort Calhoun. Economically, the region will survive the end of Fort Calhoun's nuclear age, local officials said. As important as the plant has been, Fort Calhoun and Blair aren't company towns whose fates are tied to a single employer. Many residents already commute to Omaha for jobs. Cargill in the past two decades also has built up a formidable corn-processing facility just north of the power plant.

"It's going to cause some rough waters," said Mayor Robinson. "But it's not going to shut our town down. We'll survive this. We're going to keep going." But there's no question: Without the nuclear plant that took its name from the town, life in Fort Calhoun will never be the same. Said Frakes: "It's like watching an old friend die."

(By Henry J. Cordes / World-Herald staff writer The Omaha World-Herald OMAHA METRO)

NWI News Board

The following key activities are being conducted by NWI professionals...

- Entergy Corp.—Performance Improvement/CAP, CFAM Support, Scram Reduction Initiative
- Entergy’s ANO Performance Improvement/CAP
- Entergy’s GGNS Support
- EPRI SLAP Study



We wish to express special thanks to the following clients for making NWI a preferred consulting company.

- Entergy Eschelon
- Arkansas Nuclear One
- Grand Gulf Nuclear Station
- EPRI

Thank You

Our program specialties include: Human Performance, Training and Accreditation, Simulator Instructor Training, Operations Training, Engineering Services, Corrective Actions Program Improvement, Root Cause Analysis and Self-Assessment, NRC Exam Writing, CBT for Dry Cask Storage/ RadWaste Training, and many Human Performance Trainers.



Editor:
Frank S. Tsakeres
NWI Director of Operations



Associate Editor:
Kate Hendrickson
NWI Director, Business Administration

NWI Consulting, LLC, PO Box 33117, Knoxville, TN 37930



(865)385-6166 (Off) ; (865) 769-5444 (Fax)