

US Nuclear Energy Again Challenged



Hurricane Sandy shut down at least three nuclear reactors in the Northeastern region, sending U.S. nuclear-power the lowest since 2003. Generation nationwide declined by 6.4 percent to 69,640 megawatts, or 68 percent of capacity, the biggest slide since Aug. 15, 2003, according to U.S. Nuclear Regulatory Commission data compiled

by Bloomberg. Output was 17 percent lower than a year ago; with 28 of 104 nuclear reactors offline. Sandy, the Atlantic superstorm that came ashore in southern New Jersey late yesterday and blacked out southern Manhattan, caused the shutdown of Entergy Corporation's Indian Point 3 reactor, Constellation Energy Group Inc.'s Nine Mile Point Unit 1 and Public Service Electric and Gas (PSEG) Salem 1 plant. With a combined capacity of 2,820 megawatts, the units account for

about 11 percent of the total in the Northeast. Indian Point 3 and Nine Mile 1 are located in New York, while Salem is situated in New Jersey. The 1,025-megawatt Indian Point 3, located about 27 miles (43 kilometers) north of New York City, tripped offline when the connection between a generator on site and another off site was lost, according to a company statement. Indian Point 2 continued to operate at full power. "If the generator has no place to send its power, it shuts down automatically by design to protect itself from electrical damage," Jerry Nappi, an Entergy Corp. spokesman, said in an e-mail today. "At Indian Point yesterday, the river level and wind

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A Perspective on Learning Organiza-

By: Tim Bostwick

Operational Focus for a Learning Organization

Nuclear workers are constantly reminded, rightfully so, the work we do each day should be done with an Operational Focus. That includes every phase of business and plant decision-making through hands-on task implementation. As we perform, we are to keep an Operational Focus "end-in-mind" and maintain it as a fundamental mind-set. Having that expectation and standard continually reinforced helps ensure the entire site is effectively aligned as they continuously strive to perform as an Operationally Focused organization. The same level of focus and performance expectation needs to be applied towards becoming a Learning Organization.

The words Learning Organization are used frequently. On the surface they sound like something that every organization should want to become. At some level, organi-

zations are learning all the time. So why do so few actually become known as Learning Organizations? One reason is that many companies have failed to grasp the basic truth that **'Continuous improvement requires an unending commitment to learning.'** How, after all, can an organization improve without first learning something new? In the absence of committed learning, companies and individuals tend to repeat old practices that fail to produce results.

Another important reason most organizations do not learn is their lack of attention to small, everyday organizational failures, especially as compared to the formal investigative 'after-consequence reviews' triggered by large catastrophic failures. Small failures or 'incidents,' are often overlooked because at the time they occur because they appear to be insignificant mistakes or isolated anomalies. Organizations fail to make timely use of these important learning opportunities. When small failures are not widely identified, dis-

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had no impact on plant operation. There were also no issues with debris in the river." Nine Mile Point 1, a 621-megawatt reactor near Oswego, New York, was automatically shut down when a power pole was blown over into electrical components according to Jill Lyon, a Constellation spokeswoman. Off-site power was restored at about 3:30 a.m. Public Service manually shut down its 1,174-megawatt Salem 1 reactor near Wilmington, Delaware, when four of the station's six water circulating pumps became unavailable because of the storm, Joe Delmar, a company spokesman, said today. The circulating pumps use the Delaware Bay/River to condense steam. There is no estimated time for restart of Unit 1, Delmar said, noting that Unit 2 is offline for refueling. Public Service suspended all refueling work on Oct. 28 as Superstorm Sandy approached the U.S. East Coast. "The biggest challenge overnight was waves hitting the circulating water systems at both stations," Delmar said in an e-mail responding to questions today. There was "lots of river grass and debris," he said. The 1,061-megawatt Hope Creek 1 unit, also operated by Public Service and located near Wilmington, is stable and operating at full power, Delmar said. The three shutdowns were the biggest declines in nuclear power in the Northeastern region, where generation dropped 24 percent to 13,835 megawatts, according to commission data compiled by Bloomberg. That's the region's lowest production level since 1998 as nine reactors are offline. Reactor maintenance shutdowns, usually undertaken in the U.S. spring or fall when energy use is lowest, can increase consumption of natural gas and coal to generate electricity. The average refueling down time was 43 days in 2011, according to the Nuclear Energy Institute.

A Perspective on Learning Organizations



cussed and analyzed, it is very difficult for larger failures (Accidents) or major failures (Disasters) to be prevented. Bazerman and Watkins (2004) identify four ways in which organizations fail to learn from the failures that occur around them:

1. **Scanning Failures:** failure to pay close attention to potential problems both inside and outside the organization; this failure could be due to arrogance, a lack of resources, or simple inattention.
2. **Integration Failures:** failure to understand how pieces of potentially complicated information fit together to provide lessons of how to avoid crises
3. **Incentive Failures:** failure to provide sufficient rewards to people who report problems and take actions to avoid possible crises
4. **Learning Failures:** failure to draw important lessons from crises (incidents or accidents) and preserve their memory in the organization

Organizational leaders who enable, allow, or ignore one or more of these failures jeopardize the future safety and growth of their organizations. The key is not just about learning. The keys are WHEN the learning takes place and WHAT behavior adjustments are implemented to take full advantage of the learning. It is pretty much universally accepted that the most beneficial learning is done before having to suffer overly severe consequences. Even though some learning does take place after experiencing consequence, it is more of a reactive learning situation and should not be the primary method for an aspiring organization. One of the big problems is that by the time the various circumstances aligned to trigger a significant event, the associated smaller day-to-day errors had been repeated many times, leading to far more complicated analysis and rework than if many of the smaller errors had been identified and dealt with immediately. **A central insight, therefore, is the redesign of the site's failure analysis approach to make smaller error identification and correction a primary organizational learning strategy.** Clearly, to become a Learning Organization and enjoy the inherent benefits, we must strive to become a "Proactive" Learning Organization. (Proactive = prior to experiencing severe consequence)

References:

Bazerman, M. H., & Watkins, M. D. (2004). *Predictable surprises: The disasters you should have seen coming and how to prevent them*. Boston: Harvard Business School Press.

Some Industry News Bites...

- China's ok on nuclear bolsters emission cut—October, 2012 (Xinhua) - BEIJING - China has announced its readiness to approve with caution new nuclear power projects, a move that bolsters the government's resolve to fuel rapid economic growth while striving to meet carbon emission cut targets. About one-and-a-half years after China began, in March 2011, to halt approvals of new nuclear projects due to the Fukushima catastrophe, the latest decision by the State Council, China's cabinet, to lift the ban meant concerns over possible radioactive contamination finally gave way to endeavors to optimize the country's energy structure amid high demands. It is also expected to help China fulfill its commitment about cutting carbon dioxide emissions per unit of GDP by 17 percent from 2010 to the end of 2015. Then further by 40 to 45 percent by 2020 from the 2005 level, a demanding task if the government intends to sustain high economic growth. The new plan, unveiled at the State Council executive meeting that discussed and passed the Nuclear Power Safety Plan (2011-2020) and the Mid- and Long-term Development Plan for Nuclear Power (2011-2020), did not catch much attention from members of the public, suggesting many have recovered from being overwhelmingly afraid to cool-headed. China's population and rapid economic growth places huge demands on energy, with the country's primary output equaling 3.18 billion tonnes of standard coal in 2011, ranking it first in the world.

Output of natural gas and crude oil also ballooned. Imports of the two energy resources are expected to further rise due to limited domestic findings and the construction of more transmission pipes. Although traditional energy is so far in no immediate danger of severe shortage, China must act sooner than later to develop alternative energy to avoid paying heavier prices, most notoriously air pollution, for consuming coal and oil. In recent years, China has already quickened steps to tap new energy reserves. Nuclear energy, unpredictable as it may be, is also known for being highly productive and clean, if no accidents like explosion or leakage occur. As nuclear energy accounts for about 1.8 percent of China's total power output, there is room for further development. The key question is how to minimize risks. The new plans explicitly stated that no nuclear projects would be constructed in inland regions in the coming five years and that adequate justification processes are a prerequisite for new projects. The documents also stressed that China should constantly carry out safety upgrades on currently operating reactors and use the most advanced mature technologies.

- Electricity on the wholesale market is so inexpensive, its price depressed by cheap natural gas, that some reactors may not have enough revenue to justify needed capital expenditures. Experts say that as a result, the nuclear industry may be nearing its first round of retirements since the mid-1990s. Dominion, which is based in Richmond, Va., announced it would close its plant in Kewaunee, Wis., which it had been trying, unsuccessfully, to sell for about a year. It had intended to buy more units in the Midwest and gain efficiencies by operating a fleet there, but found it could not do so. When Dominion bought the plant, in 2005, it signed agreements to sell the plant's output at rates reflecting a strong market for electricity. As those agreements expire, with a projection for continued lower prices, it is "uneconomic for Kewaunee to continue operations," the company said. That could be a harbinger of more closings, but it is not the only trouble sign for the industry. Some plants, like Indian Point in New York and Vermont Yankee, face determined political challenges to their continued operation. But plain old economics could affect a lot more plants, including Crystal River, north of Tampa on Florida's Gulf Coast, which has not run since September 2009, when it shut down for replacement of major components. The installation job may have damaged the containment building, which may not be worth the \$1.3 billion or so it would take to fix. In New Jersey, Exelon agreed in late 2010 to shut down the Oyster Creek reactor, the nation's oldest operating commercial plant, by 2019 rather than rebuild its cooling system to meet environmental rules. In California, the San Onofre reactors closed in 2012 after apparently flawed new heat exchangers developed leaks. Even plants with no pressing repair problems are feeling the pinch, especially in places where wholesale prices are set in competitive markets. According to an internal industry document from the Electric Utility Cost Group, for the period 2008 to 2010, maintenance and fuel costs for the one-fourth of the reactor fleet with the highest costs averaged \$51.42 per megawatt hour. That is perilously close to wholesale electricity costs these days.

Christopher Crane, the chief executive of Exelon, the nation's largest nuclear operator, said his company's reactors

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Some Industry News Bites...



sometimes found themselves selling electricity at hours when the market price was negative, driven below zero by a surplus of wind energy late at night during periods of low demand. In other words, they have to pay when they produce power, instead of being paid. And even during hours of higher demand, prices on the open market are low because of the low price of natural gas. The price of natural gas has to recover for his older nuclear plants to avoid being “challenged,” he said. All but one of the 104 operable reactors in the United States date from the 1980s or earlier, and utilities have broken ground on only four new units in the last few years, two each in Georgia and South Carolina. Investing in an upgrade for an old plant to become more competitive is like replacing the transmission in an old car. The owner has to decide whether there are likely to be enough miles left in the clunker for the investment to be sensible.

And reactor owners are seldom sentimental. “It’s a business,” said Marvin S. Fertel, president and chief executive of the Nuclear Energy Institute, the industry’s main trade association. “People are going to make good business decisions.” The hardest plants to operate profitably are the smaller ones that stand alone — as opposed to those at two- or three-reactor sites — and are run by an operator with no other assets in the vicinity, according to experts. The stress comes after a decade of remarkable stability for the nuclear fleet, which, contrary to the expectations of some of its opponents, has shown some signs of prosperous maturity. According to industry statistics, 71 reactors have received permission to operate up to 20 years beyond their initial 40-year operating licenses and the applications of 15 more are under review. Another 17 have announced their intention to seek renewal, leaving only one with unannounced intentions.

- **William D. Johnson Named President & Chief Executive Officer of TVA.** KNOXVILLE, Tenn. – The TVA Board of Directors announced today that William D. Johnson, former chairman, president and chief executive officer (CEO) of Progress Energy, Inc., will become president & CEO of the \$11 billion federal agency, effective January 1, 2013. Johnson, 58, will succeed Tom Kilgore, 64, who has served as TVA’s first president & CEO since 2006. TVA Board Chair Bill Sansom said in a press conference at TVA’s Knoxville Headquarters, “We are very fortunate to have someone of Bill Johnson’s caliber as TVA’s next president & CEO. Bill is a seasoned CEO with deep experience leading a company with a diverse energy portfolio – from coal and gas, to nuclear, hydro and renewables. TVA will benefit from his strong leadership skills, deep industry expertise and ability to drive employee engagement.”



22 October 2012. The Kewaunee nuclear power plant in Wisconsin will close by mid-2013 and will then be decommissioned, Dominion announced after failing to find a buyer for the plant. Dominion bought the single 574 MWe pressurized water reactor in July 2005, in anticipation of establishing a portfolio of nuclear units in the Midwest region. The company paid \$220 million in cash for Kewaunee, including \$36.5 million for fuel. However, Dominion’s failure to successfully bid for other suitable plants in the region when they became available diminished the strategic rationale for retaining Kewaunee and in April 2011, the company announced that it had decided to sell. At that time the company was confident that it would find a

buyer for Kewaunee, especially as the plant’s operating license had recently been extended for a further 20 years, until 2033. Having failed since then to find a purchaser, Dominion has now said it will shut down the plant, which began operating in 1974. Pending a grid reliability review by the Midwest Independent Transmission System Operator, Dominion expects to end power generation at Kewaunee in the second quarter of 2013 and to then begin decommissioning activities.

A Nobel Prize for Failure

As John Gurdon demonstrated by winning a Nobel prize, being written off as a failure is no barrier to success in any field...Yesterday I saw the announcement of the first Nobel Prize of 2012, which was the Nobel Prize for Physiology or Medicine. The prize was awarded jointly to John B. Gurdon and Shinya Yamanaka, for their work on stem cells. Among all the genuine plaudits and explanations about what exactly it is they got the prize for, one amusing element has come up as well. It turns out that Gurdon was once told by his biology teacher that he was a terrible student. The full quote reads: "I believe Gurdon has ideas about becoming a scientist; on his present showing this is quite ridiculous; if he can't learn simple biological facts he would have no chance of doing the work of a specialist, and it would be a sheer waste of time, both on his part and of those who would have to teach him."

This prediction, to put it as diplomatically as possible, turns out to have been incorrect. This was same time ago, Gurdon is now in his seventies, but I would still argue with this harsh conclusion (even without the obvious benefit of hindsight). Firmly sticking to the established facts is far from a universal requirement for decent scientists, if anything it's unhelpful. Try filling a PhD thesis with established facts, your examiners might have something to say about that. Gurdon's teacher clearly isn't helping dispel the old cliché "Those who can't, teach". For the record, I've never believed this claim, for many reasons. For one, what if you can't teach? What happens then? It would be easy to dismiss the teacher as a narrow minded fool, rigidly sticking to his idea of what science is and refusing to consider any alternative possibilities, but what if he was smarter than that? As a science teacher he may have had some understanding of reverse psychology, and by telling Gurdon he couldn't be a scientist he may have been trying to enhance his resolve to become one? But don't listen to my theories about reverse psychology, what do I know.

But this is just one example of a successful scientist who was at one point told that he would never be a scientist by someone who supposedly knew about science. One teacher allegedly said "It doesn't matter what he does, he will never amount to anything", to the father of a slow witted and unpromising young chap known as Albert Einstein. Perhaps you've heard of him? Robert Goddard was widely mocked and ridiculed by an entire scientific community, and still became the father of modern rocket propulsion. That guy Isaac Newton only got involved in maths when his uncle took over his education when he had failed at pretty much everything else. In a way, any scientist who can't handle criticism isn't going to be suited to the field, so maybe these people who condemn successful scientists are part of some Darwinian mechanism (Darwinian, named for "a very ordinary boy, below the common standards of intellect"). For the record, I have no problem with criticism myself (he wrote, in his blog, on a popular website which allowed comments).

And it's not just straightforward scientists, Steve Jobs, whom you may have heard of, was sacked from Apple. He made the mother of all comebacks, of course. But just think about that. Steve Jobs. Sacked. From Apple! That's like Brian Wilson being sacked from the Beach Boys! What?...Oh.

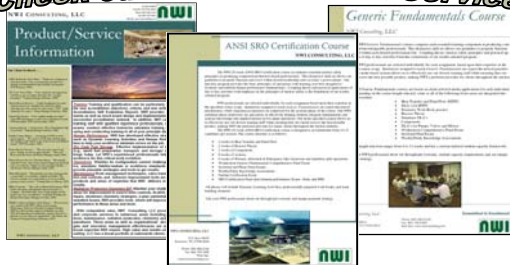
And it's not just the science and technology fields that have these critics who get it as wrong as possible. Fawcett Towers was written off as "a disaster" before it was made. Elvis Presley was told to "stick to driving a truck". The Beatles had "no future in show business". Taken together, these examples and the countless others available, should tell you that being written off by someone who is nominally 'above' you is no reason to despair. If anything, it could be a blessing by galvanising you to succeed even more to prove that arrogant bastard(s) wrong. As any statistician will tell you (probably using longer words), the views of one person are not statistically significant. Meaning, just because one person (or several) tells you that you will fail, it doesn't make it the case. I've said it before for teenagers, but it applies to everyone; don't pay too much heed to those in an influential position if they criticise you, it may be for ulterior motives. They may have vested interests, they may not want to make changes that could undermine them. Whatever the reason, always think of the context.

Taking needless criticism to heart is one of the many reasons I can't abide the X Factor or it's numerous satanic derivatives. To see arguably naïve but hopeful young people become inconsolable because Simon Cowell has criticised them gets very infuriating very quickly. I have to stop myself screaming at the screen. Just because this fake tanned tit hasn't given you his approval doesn't mean you can never have a career! He's doesn't know all things musical, he doesn't even know what size trousers he should wear! And so on. Bottom line, as has been recently demonstrated by Nobel Prize winner John Gurdon, harsh criticism, even from people who's opinion should theoretically count for a lot, is no barrier to success, be it scientific, technical, artistic or anything else. You can use it to spurn you on to achieve great things, or even write a song about it. And to any pseudoscientists, conspiracy theorists or similar reading this; negative opinions shouldn't stop you pursuing your goals, but if the very nature of reality is against you then you might want to reconsider your position. Just thought I'd clear that up."

The guardian, October, 2012

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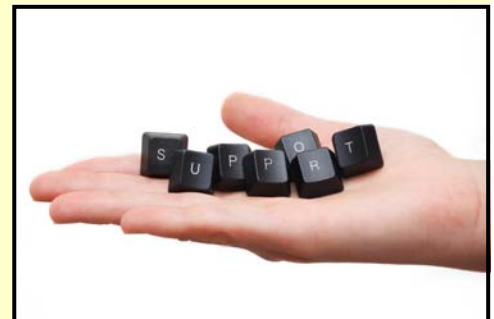
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NWI News Update

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

- OPPD/ENP Support
- Calvert Cliffs Training support
- PPL CAP/PI Support
- Xcel's Monticello Engineering EPU Support
- Entergy's Corporate Operations/Nuclear Oversight/Safety Review, IPEC Training Program Support, Fitzpatrick Training Programs, River Bend Licensing & Engineering
- Columbia Station's Operations Work Management and Outage support
- TVA Nuclear's BFNP Project support



Thank You

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- TVA's Browns Ferry Nuclear Power Plant
- Exelon Nuclear Partners
- Entergy's Grand Gulf, Indian Point & Fitzpatrick Plants
- OPPD Ft. Calhoun
- PPL Susquehanna
- DC Cook Training
- CENG Calvert Cliffs Nuclear Plant
- NextEra Energy's Point Beach Plant
- Exelon Nuclear Partners

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