



# NUCLEAR REGULATORY COMMISSION NEWS CLIPS

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## **NRC NEWS:**

### **US Must Learn From Japan Nuclear Crisis: Obama (AFP)**

[AFP](#), March 16, 2011

WASHINGTON (AFP) – President Barack Obama said Tuesday he was "deeply worried" about the potential human cost of quake-hit Japan's nuclear crisis and vowed to "further improve" the safety of US atomic facilities.

"Nuclear plants are designed to withstand certain levels of earthquakes, but having said that, nothing's completely failsafe, nothing is completely foolproof," he said in an interview with a CBS television station in Pennsylvania.

"So each time these kinds of events happen, I think it's very important for us to examine how we can further improve the safety and performance of these plants," said the president.

But he emphasized that the US Nuclear Regulatory Commission "thinks through all eventualities" as part of its oversight of US atomic power and noted "all energy sources have their downside" -- citing the catastrophic Gulf of Mexico oil spill of 2010.

"I do think it's important for us to think through constantly how can we improve nuclear technologies to deal with additional safety concerns that people have," he said.

The US government has thus far rebuffed relatively muted calls for a nuclear moratorium amid the crisis at Japan's Fukushima power plant, which has suffered explosions and a fire in the wake of Friday's devastating earthquake and tsunami.

Obama said he was not worried that any radiation seeping out the plant might reach US shores, but emphasized: "I'm deeply worried about radiation effects in Japan."

"Our hearts go out to the people of Japan. They are dealing with a triple whammy -- the earthquake, the tsunami, and now this nuclear accident. So we're providing them all the support that we can. We want to make sure that they know that we have their backs and are one of our closest allies and closest friends."

"There are some dangers for radiation release that could affect the immediate vicinity of nuclear plants and potentially could drift over other parts of Japan," he told KDKA.

"But I've been assured that it -- any nuclear release dissipates by the time it gets even to Hawaii, much less the mainland of the United States," he said.

### **Obama Defends Nuclear Power Amid Japan Crisis (AP)**

[Associated Press](#), March 16, 2011

WASHINGTON – President Barack Obama is defending nuclear power as an important source of energy in the US, even as new questions are raised about its safety following radiation leaks from an earthquake and tsunami-damaged nuclear plant in Japan.

In interviews Monday with Pittsburgh television station KDKA and Albuquerque's KOAT, Obama said nuclear facilities in the US are closely monitored and are designed to withstand certain levels of earthquakes.

"I've already instructed our nuclear regulatory agency to make sure that we take lessons learned from what's happened in Japan and that we are constantly upgrading how we approach our nuclear safety in this country," the president said on KOAT.

However, Obama said that all energy sources have downsides and none are foolproof. He said the US learned that last summer during the massive oil spill in the Gulf of Mexico.

Obama says he has been assured that Hawaii and the US West Coast will not be affected by radiation released from the damaged plant in Japan.

The president has been doing a series of interviews with local television stations as the White House seeks to get his message beyond the Washington beltway as he prepares to run for re-election in 2012.

### **Obama Seeks 'Lessons' On Energy (POLITCO)**

By Matt Negrin

[Politico](#), March 16, 2011

President Obama said Tuesday that he's asked the country's nuclear regulatory agency to identify "lessons learned" from the earthquake in Japan that has prompted a crisis among its reactors.



Obama told an Albuquerque news station, in an interview at the White House, that he asked the agency to see that "we are constantly upgrading how we approach our nuclear safety in our country."

In another interview, with a Pittsburgh station, Obama said flatly that he's not worried about radiation reaching US soil from Japan.

He also stood by plans to generate nuclear energy in the United States. "Nuclear plants are designed to withstand certain levels of earthquakes, but having said that, nothing's completely failsafe," he said. "Nothing's completely foolproof. And so each time these kinds of events happen, I think it's very important for us to examine how we can further improve the safety and performance of these plants."

Obama granted local reporters three interviews in the Map Room as part of his effort to sell his education agenda. But the earthquake in Japan — and even his NCAA bracket — arose as topics in the interviews.

## **Obama's Energy Policy Faces Pressure (WSJ)**

### **White House Resists Calls From Democrats for a Review of Nuclear-Plant Safety; Official Cites Rigorous Regulations**

By Jonathan Weisman And Stephen Power

[Wall Street Journal](#), March 16, 2011

Full-text stories from the Wall Street Journal are available to Journal subscribers by clicking the link.

## **Japan's Nuke Threat 'A Wake-up Call' For The US (USAT)**

By Peter Eisler, Julie Schmit, And Donna Leinwand

[USA Today](#), March 15, 2011

In the world of nuclear power, it turns out the "worst-case scenario" wasn't bad enough.

The concept of the worst case underpins everything from the way reactors are designed to the way emergency response plans are crafted. Now it's being redefined in the scramble to avert massive radiation releases from crippled reactors in Japan. When the radioactive steam and smoke have cleared, engineers, regulators and policymakers in the United States and across the globe will have a new reference point in the debate over how to build and operate nuclear power plants — or whether to have them at all.

"This was a wake-up call for anyone who believed that, after 50 years of nuclear power in this world, we have figured it out and can go back to business as usual," said Mark Hibbs, a senior associate at the Carnegie Endowment's Nuclear Policy Program. In countries worldwide that have nuclear power plants or plan to build them, "There is definitely going to be a reassessment."

Already, the threat of partial meltdowns of uranium fuel rods in three Japanese reactors have forced engineers to try new, unproven tactics to prevent a runaway atomic reaction that could bring horrific environmental, economic and public health consequences. As a result, regulators in the USA and abroad have acknowledged that their safety protocols and emergency response plans will have to be revisited based on what is learned from the event.

In the United States, where 104 nuclear power reactors provide about 20% of the nation's electricity, the Japan disaster threatens to undermine a tenuous coalition of industry and environmental groups that support President Obama's push to make nuclear power a significant piece of the nation's long-term push toward energy independence. It also could change the way the government reviews and renews permits for existing plants.

One early test will be whether federal officials approve plans by Southern Co. to build a \$14 billion nuclear plant in Georgia. That reactor would be the first constructed in the United States since the partial meltdown at the Three Mile Island plant in Pennsylvania in 1979.

Southern CEO Tom Fanning said Monday that his company does not expect any delays in the project, which would rely on \$8 billion in federal loan guarantees backed by the Obama administration.

Officials at the Nuclear Regulatory Commission, which licenses and oversees the operation of nuclear power plants, have said the commission will review its regulatory posture based on the events in Japan. They have been circumspect, however, about whether or how its rules or approach may change.

"As we get more information from Japan, as this immediate crisis ultimately comes to an end, we will look at whatever information we can gain from this event and see if there are changes we need to make to our system," NRC Chairman Gregory Jaczko said at a White House briefing Monday.

A new scenario



The double whammy of an earthquake of enormous force followed by a massive tsunami has created emergencies at as many as nine reactors situated across three power plant complexes in Japan.

Though all the reactors shut down, the loss of power at some sites incapacitated cooling systems that pump water needed to keep the reactors' radioactive uranium fuel rods from superheating and melting. Officials pumped seawater into some of the reactors to cool them, accepting that the move will leave them forever inoperable.

If such efforts don't keep the reactors under control, the most feared outcome is that the molten fuel rods could burn through steel and concrete containment structures, escaping into the environment. The resulting release of high levels of radiation could pose health risks across a large swath of territory for many years. At the same time, officials are concerned that the quake and tsunami may have damaged on-site storage facilities holding "spent" reactor fuel rods, which can catch fire and spread high levels of radiation if exposed to air for an extended period.

While that scenario is seen by the Japanese government and many independent experts as highly unlikely, the prospect of a reactor meltdown in conjunction with a spent fuel fire would result in a catastrophe beyond the scope of Three Mile Island or even Chernobyl, the 1986 meltdown of a Ukrainian reactor that was the worst nuclear power accident in history.

"I do not believe this scenario has ever been written," said Arjun Makhijani, president of the Institute for Energy and Environmental Research. Makhijani, an engineer, specializes in nuclear fusion and has written extensively on nuclear power.

Scenarios that are considered highly improbable, such as those considered to have less than a one-in-a-million chance of occurring, typically are not considered by the NRC when reviewing nuclear plants' emergency plans, regardless of potential consequences, Makhijani said.

But in light of the events in Japan, he said, "We've got to revisit this idea of 'highly unlikely' and how we deal with it."

Nuclear power advocates note that existing safety requirements have a strong track record and dispute the notion that the disaster in Japan should automatically prompt tougher regulations.

"Thus far, from what we know, (the Japanese) have done what they need to do" to control the reactors and stave off disaster, said Steve Kerekes of the Nuclear Energy Institute, which does research in support of nuclear power. "We can anticipate that there will be lessons learned," he adds, but "whether that appropriately should manifest itself in industry practices vs. regulatory standards, it's too soon to know."

US reactors have run for 3,500 combined reactor years without causing public harm, Kerekes said. That history demonstrates that the nation's nuclear power plants are safe and should be part of any long-term strategy to lessen the country's dependence on foreign oil, he said.

Yet even US plants that were designed to withstand major earthquakes have not been tested in an event as severe as the one in Japan.

In 2003, the Diablo Canyon Nuclear Power Plant in Avila Beach, Calif., withstood the magnitude 6.5 San Simeon earthquake, which was centered about 31 miles from the plant.

Throughout the quake, both reactors maintained full power. But the facility is designed only to withstand ground movement generated from quakes with a magnitude of 7.5 on the Richter scale — well short of the magnitude 9.0 quake that hit Japan.

Going forward

With the outcome of the Japanese reactors still unfolding, moves to reassess the viability of nuclear power are beginning.

In Germany, for example, the government announced a three-month suspension of a decision to extend the life of nuclear power plants. That means two older ones will be taken off the grid, pending safety probes. German energy agency Dena is recommending that nuclear power be phased out and reactors in the country that are similar to those crippled in Japan be switched off, the German newspaper Handelsblatt reported.

In the United States, the NRC is weighing 12 applications to add 20 reactors in the next 15 to 20 years, according to the Nuclear Energy Institute. An additional six reactors have been put on hold in some cases as sponsors struggled financially with the effects of the recession and a drop in natural gas prices that made nuclear power less competitive.

One of the chief hurdles facing companies seeking to build power plants is paying for them. Many investors have been unwilling to shoulder the financial uncertainty associated with getting such projects approved — a costly process that can take years. And once a plant is approved, there are more monetary risks if a plant runs into safety problems.

President Obama is pushing Congress to supply \$54 billion in loan guarantees to the nuclear industry, a big increase over previous levels. That would likely help fund 10 or so reactors, including the plant scheduled for Georgia, said Mark Cooper, senior fellow at the Vermont Law School's Institute for Energy and the Environment.

However, in light of events in Japan, many independent experts say political support for the initiative is sure to diminish.

"This is yet another example of how a multibillion-dollar investment can turn into a multibillion-dollar liability within minutes," Cooper said. "The only way that new reactors will be built in the United States is if the economic risk is put upon the taxpayer through federal loan guarantees and/or upon ratepayers through advanced cost recovery."

The prospects for the loan guarantee program are now "very dim," said Robert Alvarez, a scholar at the Institute for Policy Studies and former senior adviser at the Energy Department.

Contributing: Mimi Hall, Dan Vergano, Associated Press, Bloomberg News

## **Experts Had Long Criticized Potential Weakness In Design Of Stricken Reactor (NYT)**

By Tom Zeller Jr.

[New York Times](#), March 16, 2011

The warnings were stark and issued repeatedly as far back as 1972: If the cooling systems ever failed at a "Mark 1" nuclear reactor, the primary containment vessel surrounding the reactor would probably burst as the fuel rods inside overheated. Dangerous radiation would spew into the environment.

Now, with one Mark 1 containment vessel damaged at the embattled Fukushima Daiichi nuclear plant and other vessels there under severe strain, the weaknesses of the design — developed in the 1960s by General Electric — could be contributing to the unfolding catastrophe.

When the ability to cool a reactor is compromised, the containment vessel is the last line of defense. Typically made of steel and concrete, it is designed to prevent — for a time — melting fuel rods from spewing radiation into the environment if cooling efforts completely fail.

In some reactors, known as pressurized water reactors, the system is sealed inside a thick steel-and-cement tomb. Most nuclear reactors around the world are of this type.

But the type of containment vessel and pressure suppression system used in the failing reactors at Japan's Fukushima Daiichi plant is physically less robust, and it has long been thought to be more susceptible to failure in an emergency than competing designs. In the United States, 23 reactors at 16 locations use the Mark 1 design, including the Oyster Creek plant in central New Jersey, the Dresden plant near Chicago and the Monticello plant near Minneapolis.

G.E. began making the Mark 1 boiling-water reactors in the 1960s, marketing them as cheaper and easier to build — in part because they used a comparatively smaller and less expensive containment structure.

American regulators began identifying weaknesses very early on.

In 1972, Stephen H. Hanauer, then a safety official with the Atomic Energy Commission, recommended that the Mark 1 system be discontinued because it presented unacceptable safety risks. Among the concerns cited was the smaller containment design, which was more susceptible to explosion and rupture from a buildup in hydrogen — a situation that may have unfolded at the Fukushima Daiichi plant. Later that same year, Joseph Hendrie, who would later become chairman of the Nuclear Regulatory Commission, a successor agency to the atomic commission, said the idea of a ban on such systems was attractive. But the technology had been so widely accepted by the industry and regulatory officials, he said, that "reversal of this hallowed policy, particularly at this time, could well be the end of nuclear power."

In an e-mail on Tuesday, David Lochbaum, director of the Nuclear Safety Program at the Union for Concerned Scientists, said those words seemed ironic now, given the potential global ripples from the Japanese accident.

"Not banning them might be the end of nuclear power," said Mr. Lochbaum, a nuclear engineer who spent 17 years working in nuclear facilities, including three that used the G.E. design.

Questions about the design escalated in the mid-1980s, when Harold Denton, an official with the Nuclear Regulatory Commission, asserted that Mark 1 reactors had a 90 percent probability of bursting should the fuel rods overheat and melt in an accident.

Industry officials disputed that assessment, saying the chance of failure was only about 10 percent.

Michael Tetuan, a spokesman for G.E.'s water and power division, staunchly defended the technology this week, calling it "the industry's workhorse with a proven track record of safety and reliability for more than 40 years."

Mr. Tetuan said there are currently 32 Mark 1 boiling-water reactors operating safely around the globe. "There has never been a breach of a Mark 1 containment system," he said.

Several utilities and plant operators also threatened to sue G.E. in the late 1980s after the disclosure of internal company documents dating back to 1975 that suggested that the containment vessel designs were either insufficiently tested or had flaws that could compromise safety.

The Mark 1 reactors in the United States have undergone a variety of modifications since the initial concerns were raised. Among these, according to Mr. Lochbaum, were changes to the torus — a water-filled vessel encircling the primary containment



vessel that is used to reduce pressure in the reactor. In early iterations, steam rushing from the primary vessel into the torus under high pressure could cause the vessel to jump off the floor.

In the late 1980s, all Mark 1 reactors in the United States were also retrofitted with venting systems to help reduce pressure in an overheating situation.

It is not clear precisely what modifications were made to the Japanese boiling-water reactors now failing, but James Klapproth, the chief nuclear engineer for General Electric Hitachi, said a venting system was in place at the Fukushima plants to help relieve pressure.

The specific role of the G.E. design in the Fukushima crisis is likely to be a matter of debate, and it is possible that any reactor design could succumb to the one-two punch of an earthquake and tsunami like those that occurred last week in Japan.

Although G.E.'s liability would seem limited in Japan — largely because the regulatory system in that country places most liability on the plant operator — the company's stock fell 31 cents to \$19.61 in trading Tuesday.

## **Japan Crisis Spawns New Look At US Reactors' Design And Preparedness (WP)**

By Steven Mufson and Jia Lynn Yang

[Washington Post](#), March 16, 2011

This week, as Tokyo Electric Power Co. struggled to pump seawater into a high-pressure, ultra-hot reactor core, a US utility decided to buy a firetruck with high-pressure pumping capacity for its nuclear plant.

Separately, NextEra Energy, a Florida-based utility, prepared a slide presentation explaining the Japanese nuclear crisis in detail - and noting similarities between the General Electric design used in Japan and the GE design used for NextEra's Duane Arnold plant near Cedar Rapids, Iowa.

"Extensive evaluations are underway to validate design capabilities and vulnerabilities... for events such as earthquakes, flooding, and extended Station Blackouts," the slides said. It noted that after the Sept. 11, 2001, attacks, the company had bought diesel-driven pumps and figured out how to inject water from nearby sources into the reactor.

The crisis in Japan has spawned new looks at -- and revived old debates about -- US nuclear plants and how prepared they are for natural or man-made disasters. The GE boiling-water reactor design, found in 23 US nuclear plants, has come under new scrutiny. And because the Japanese crisis started with a loss of grid and generator power, backup electrical systems are being looked at anew.

"Any time something like this happens, you have to be an idiot not to look at lessons learned," said Michael W. Golay, professor of nuclear engineering at the Massachusetts Institute of Technology. "It comes down to what level you want to set performance standards to provide against a rare event. Every society sets a limit, and the question is just where you want to set the limit."

Five out of the six reactors at the Fukushima Daiichi nuclear complex share the design GE created decades ago to serve as a smaller, less expensive alternative to what competitors were offering.

Officials have called on plant operators to make major improvements to the GE model -- known as Boiling Water Reactor Mark 1 -- to help it hold up in an extreme accident.

In 1975, a Nuclear Regulatory Commission report cast doubt on the strength of the system used to capture excess steam inside the reactor or hot materials in an emergency. In response, regulators required each Mark 1 plant operator to fortify the reactor's torus -- the donut-shaped tube at the bottom of the reactor that condenses steam and other substances into a pool of water.

Japanese officials have said that Tuesday's explosion at Fukushima Daiichi unit 2 occurred in or near the torus and seems to have opened a route for water and radioactive substances to escape the thick-walled primary containment vessel.

In 1979, the Three Mile Island accident prompted another look at the Mark 1. Regulators examined the reactor's ability to handle a buildup of hydrogen gas - which led to an explosion inside the Three Mile Island containment structure - and ordered plant operators to install vents.

At Fukushima Daiichi, those vents led to an outer building. In three of those buildings, filters and fans failed; in two of them, hydrogen-fueled explosions have destroyed the outer buildings.

An NRC spokesperson said all 23 GE boiling water reactors in the United States have satisfied regulators' earlier concerns about the ability to withstand a severe incident.

Entergy, based in New Orleans, runs three reactors with the BWR Mark 1 design.

"Obviously, I think they can hold up over time," said John Herron, president, chief executive and chief nuclear officer of Entergy Nuclear. "They're an excellent design."

Herron added that Entergy's plants have several backup power sources, including diesel generators.



"We drill on that," Herron said. "We make sure our plants are absolutely ready."

"To be fair to General Electric and that design, I don't know of any other designs that would've fared much better," said David Lochbaum, director of the Nuclear Safety Project at the Union of Concerned Scientists. "Their biggest problem wasn't the containment design. It was the loss of power."

Harold Denton, the top safety official at the NRC who raised questions about the Mark 1 in the 1980s, said he was monitoring the events at the Fukushima Daiichi plant from his home in Knoxville, Tenn.

"It's only after [Three Mile Island] that I and everyone else got serious," said Denton, who has since retired. "Suppose it's a really severe accident. How do these [reactors] compare?"

Denton said the industry made adjustments after the NRC raised questions. "They accepted what was proposed, and there were changes made," Denton said. The reactors "just weren't designed to deal with a core meltdown because that seemed to be too unlikely a proposal at the time."

The Japan crisis, which began with an electricity outage, has also drawn attention to backup power. Experts say that the tsunami either waterlogged backup diesel generators, destroyed fuel tanks or flooded switch gears needed to hook up the generators - or all three.

Then there's the human element.

"I worry about human errors in the ordinary running of the plants because that tends to be how you get into trouble," said Golay, the MIT professor.

## **Federal, State Officials: US Reactors Safe (BOSH)**

By Christine Mcconville And Richard Weir

[Boston Herald](#), March 16, 2011

Federal and state leaders scrambled yesterday to reassure Americans that American nuclear reactors are safe, even as terrifying images of radiation contamination in Japan flooded television screens and computer terminals.

"All our plants are designed to withstand significant natural phenomena like earthquakes, tornadoes and tsunamis," said US Nuclear Regulatory Commission Chairman Gregory Jaczko yesterday at a White House press briefing.

"Right now we believe we have a very strong program in place," he said.

"As we get more information from Japan, as this immediate crisis ultimately comes to an end, we will look at whatever information we can gain from this event and see if there are changes we need to make to our system."

Early today in Japan, a third explosion rocked the earthquake-damaged Fukushima Dai-ichi nuclear plant.

Officials acknowledged that fuel rods at the reactor had been temporarily exposed to the air — heightening the risk of an uncontrolled release of radiation into the environment.

In Boston, US Homeland Security Secretary Janet Napolitano said of the Nuclear Regulatory Commission, "Right now they don't see any danger of radiation from Japan some- how coming to the United States at any kind of dangerous level."

She also stressed that the nation's nuclear power plants are "highly, highly regulated by the NRC, particularly in respect to construction and security."

"Nuclear power plants are required to have extensive plans and exercises, should there need to be an evacuation," she said.

There are important differences between the leaking plant in Japan, and Massachusetts' nuclear plant in Plymouth, noted Massachusetts Lt. Gov. Tim Murray.

"In Japan, it's water-cooled," he said, while in Massachusetts, "this is air-cooled by diesel engine."

## **US Power Plants Should Withstand Natural Disasters (NPR)**

**Morning Edition**

By Scott Horsley

[NPR](#), March 16, 2011

The Obama administration is not backing away from nuclear power. That's despite the danger facing Japan, as that country tries to cool several reactors following last week's earthquake. The White House is offering reassurance that US plants are built to withstand natural disasters.

LINDA WERTHEIMER, host:

The Obama administration is not backing away from nuclear power, despite the dangers now facing Japan. The White House is offering reassurance that plants in the United States are built to withstand natural disasters. NPR's Scott Horsley reports.



SCOTT HORSLEY: Officials who oversee nuclear plants in the US are keeping a close eye on what's happening in Japan. But Greg Jaczko, who chairs the Nuclear Regulatory Commission, insists the problems at the Fukushima Daiichi reactors have not shaken his confidence.

Mr. GREG JACZKO (Nuclear Regulatory Commission): Whenever there's any new information, we always make changes, if necessary. But right now we continue to believe that nuclear power plants in this country operate safely and securely.

HORSLEY: And for an administration determined to address the challenge of climate change, nuclear power is hard to turn down. As Deputy Energy Secretary Dan Poneman notes, nuclear is by far the biggest source of electricity that doesn't contribute to greenhouse gases. It produces twice as much electricity in the US as wind, solar and hydro power combined.

Mr. DAN PONEMAN (Department of Energy Deputy Secretary): It's 20 percent of the electricity of this country, 70 percent of the carbon-free electricity. We view nuclear energy as a very important component to the overall portfolio we're trying to build for a clean energy future.

HORSLEY: Poneman says lessons learned at Three Mile Island eventually resulted in safer nuclear plants, but that accident also brought nuclear development in the US to a near-standstill, something the administration hopes to avoid with this latest disaster.

## **Nuclear Industry Watchdogs In US Raise Safety Concerns (VOA)**

By Laurel Bowman

[Voice of America](#), March 16, 2011

The ongoing nuclear crisis in Japan has sparked renewed debate around the world about the safety of nuclear power.

The earthquake and tsunami in Japan devastated the island nation. Thousands are dead. Whole communities washed away. Now a new danger looms: nuclear meltdown.

Many Japanese are panicked. "Nobody is telling us, the citizens, what is really happening," one Japanese said.

What, by most accounts, has happened is this: Multiple reactors at the Fukushima Daiichi nuclear power plant have malfunctioned, with radiation leaking as a result.

Japan's prime minister said on national television that radiation levels seem very high, and Japan's chief government spokesman added this:

"Now we are talking about levels that can impact human health," said cabinet secretary Yukio Edano.

Government authorities urged those close to the reactor sites to stay indoors.

As this new nightmare unfolds in Japan, nuclear industry representatives and government officials in the US are offering assurances that nuclear power is safe.

"The American people should have full confidence that the US has rigorous safety regulations in place to ensure that our nuclear power is generated safely and responsibly," said US Energy Secretary Steven Chu.

But industry watchdogs say that simply is not so. They concede safety has improved at nuclear power plants in recent years, but they say Americans still should prepare for the worst.

"Obviously the Japanese, the most prepared for earthquakes and tsunamis than any country in the world, underestimated the potential of a 9.0 earthquake. Obviously there has to be a reappraisal of safety risks," said Kevin Kamps of the radioactive waste watchdog group

Beyond Nuclear. Kamps opposes license extensions at more than 20 nuclear power plants in the US

"Fukushima Unit One at the Daiichi Plant was a 40-year reactor. It was the first one to go into crisis. We have 23 reactors in the United States of the very same design," he said.

And Arjun Makhijani of the Institute for Energy and Environmental Research wants a thorough re-evaluation of US nuclear power plants in coastal areas and along seismic fault lines. He also wants to know who will pay for a cleanup if a nuclear disaster occurs.

"The nuclear industry is not required to even cover more than \$11 billion in costs, and at a time when we are saying how are we going to minimize government exposure and so on this is an item that should be put back on the table," Makhijani said.

Makhijani says it could cost hundreds of billions of dollars. He would like to see nuclear energy phased out over time.

"Making plutonium and fission products which last for tens of thousands of years or millions of years just to boil water isn't sensible. We can do it much better. We can do it more cleanly," Makhijani said.

Since the earthquake and tsunami in Japan, authorities have scrambled to cool the core of those reactors with sea water. But the water appears to be evaporating more quickly than it can be pumped in.

## **NUCLEAR: GE Defends Design Of Japanese Reactors (GWIRE)**



[Greenwire](#), March 15, 2011

General Electric Co., the supplier of Japan's now-stricken reactor, defended the design of its product, saying the containment system is safe and reliable.

The Fukushima Daiichi nuclear power plant is equipped with a boiling water reactor containment system provided by GE 40 years ago. Critics of the product, called Mark 1, said it is not as robust as later models.

GE dismissed the criticism.

"The BWR Mark 1 reactor is the industry's workhorse with a proven track record of safety and reliability for more than 40 years," said Michael Tetuan, spokesman for GE Hitachi Nuclear Energy. "There has never been a breach of a Mark 1 containment system."

Japanese engineers are working to cool the cores of three reactors at the plant, two made by GE and one by Toshiba Corp., after last week's earthquake.

The Toshiba reactor was damaged during a separate explosion overnight. It appears to have sustained damage only to the concrete building outside the reactor container.

The Japanese government and Jeffrey Immelt, chief executive of GE, have said the steel containers surrounding their reactors have not been affected (Andrew Dowell, Wall Street Journal, March 15). — PK

## **Can US Nuclear Plants Handle A Major Natural Disaster? (AHN)**

By John Sullivan

[All Headline News](#), March 16, 2011

As engineers in Japan struggle to bring quake-damaged reactors under control, attention is turning to US nuclear plants and their ability to withstand natural disasters.

Rep. Ed Markey, a Massachusetts Democrat who has spent years pushing the Nuclear Regulatory Commission toward stricter enforcement of its safety rules, has called for a reassessment. Several US reactors lie on or near fault lines, and Markey wants to beef up standards for new and existing plants.

"This disaster serves to highlight both the fragility of nuclear power plants and the potential consequences associated with a radiological release caused by earthquake related damage," Markey wrote NRC Chairman Gregory Jaczko in a March 11 letter.

Specifically, Markey raised questions about a reactor design the NRC is reviewing for new plants that has been criticized for seismic vulnerability. The NRC has yet to make a call on the AP1000 reactor, which is manufactured by Westinghouse. But according to Markey, a senior NRC engineer has said the reactor's concrete shield building could shatter "like a glass cup" under heavy stress.

The New York Times reported last week that the NRC has reviewed the concerns raised by the engineer, John Ma, and concluded that the design is sufficient without the upgrades Ma recommended. Westinghouse maintains that the reactor is safe.

Boiling water reactors, like the ones hit by the Japanese earthquake, are built like nested matryoshka dolls.

The inner doll, which looks like a gigantic cocktail shaker and holds the radioactive uranium, is the heavy steel reactor vessel. It sits inside a concrete and steel dome called the containment. The reactor vessel is the primary defense against disaster — as long as the radiation stays inside everything is fine.

The worry is that a disaster could either damage the vessel itself or, more likely, damage equipment that used to control the uranium. If operators cannot circulate water through the vessel to cool the uranium it could overheat and burn into radioactive slag — a meltdown.

Reports say a partial meltdown is suspected in two of three reactors at the Fukushima Daiichi Nuclear Power Station in Japan, which was hit by the 8.9 magnitude quake and ensuing tsunami.

Reactors have multiple layers of equipment to make sure this never happens. But last year, Markey asked Congress's investigative agency, the Government Accountability Office, to look into a long list of nuclear safety issues, including earthquake and flood protection.

Markey cited the 2007 Chuetsu earthquake (6.6 magnitude) that hit the Kashiwazaki-Kariwa nuclear plant. The quake started a fire, spilled some low-level radioactive waste and damaged equipment that was not critical to the reactor. It led Japanese regulators to reassess earthquake danger near the plant, and Markey wanted GAO to see whether NRC had been on top of earthquake risk in the US

## **Reactors In US Quake Zones May Be Key To Nuclear Plans (BSWK/BLOOM)**

By Jeremy Van Loon and Mark Chediak

[BusinessWeek/Bloomberg News](#), March 16, 2011



(Updates with US Representative Edward Markey's comments in thirteenth paragraph. See EXT2 for Japan quake coverage.)

March 15 (Bloomberg) – The future of President Barack Obama's plans to redesign the US energy system with low-emission nuclear plants may hinge on reactors across the Pacific Ocean as Japan's nuclear disaster renews a debate about the safety of plants.

Engineers are battling to prevent a meltdown at the Fukushima Daiichi power station crippled last week by a tsunami and the 9.0 magnitude temblor off Japan's coast. US regulators may first closely scrutinize San Francisco-based PG&E Corp.'s Diablo Canyon seaside nuclear plant in earthquake-prone California, Hugh Wynne, an analyst at Sanford Bernstein & Co. wrote in a note to clients yesterday.

"Nuclear, long term, will be decided over the next couple of weeks," said Abel Mojica, who manages energy-related limited partnerships at Tortoise Capital Advisors in Leawood, Kansas. "If there are decisions after the post mortem, that there are additional safety features required, that could add to costs."

Obama's energy plan relies heavily on nuclear power to reduce carbon-dioxide emissions harmful to the climate as well as to reduce dependence on imported oil. The president proposed tripling federal loan guarantees to \$54.5 billion to help build new reactors in the 2012 budget plan he sent to Congress.

#### 'Lot of Chaos'

As the 1979 Three Mile Island accident near Harrisburg, Pennsylvania, brought investment in nuclear power to a standstill for three decades, the disaster in Japan probably will have a similar effect as safety-related costs rise, said Marin Katusa, chief energy investment strategist at Casey Research in Phoenix. The company oversees about \$100 million in energy-related assets.

"There is going to be a lot of chaos," Katusa said. "Nuclear is going nowhere. A lot of these plants are over 40 years old and should be replaced. But the costs are going to be high."

Around the globe, governments are probing the safety of operating reactors and delaying steps to keep them going. German Chancellor Angela Merkel today halted the country's seven oldest nuclear plants, some of which were already offline, as part of a nationwide review to run through June. Switzerland yesterday suspended efforts to renew three of the country's five power stations, while China, India and Britain also paused new plant development pending a review of Japan's events.

#### Regulator's Comments

In Washington, officials indicated no official change in energy policy has been made because of the crisis in Japan.

Nuclear power "remains a part of the president's overall energy plan," Jay Carney, the White House press secretary, told reporters yesterday at a briefing.

The Nuclear Regulatory Commission remains confident that plants operating in the US are safe, Gregory Jaczko, the NRC chairman, said at the same briefing. The agency sets safety rules for the industry and must approve new-plant construction.

"If we do get information that will cause us to take action, we will take action," Jaczko said. "All our plants are designed to withstand significant natural phenomena, like earthquakes, tornadoes and tsunamis."

Representative Edward Markey of Massachusetts, the top Democrat on the Natural Resources Committee of the US House of Representatives, called for a moratorium on permits for reactors in seismically active areas. "This is going to cause real tremors in the nuclear investment area," Markey told Peter Cook on Bloomberg Television's "In the Loop."

#### Necessary Features

Markey requested today more information on the seismic safety features of US reactors near earthquake-prone zones in a letter sent to the Nuclear Regulatory Commission.

"We are concerned that these reactors may not have the features necessary to withstand the sort of catastrophic earthquake and tsunami that has crippled several reactors in Japan," wrote Markey and Representative Lois Capps of California, a Democrat.

Regulators in the US have been asked to extend the operating licenses of 13 plants with 20 reactors, according to government figures. Companies run 104 nuclear power stations to supply about 20 percent of US electricity.

The most active earthquake zones in the US include California's San Andreas fault and the New Madrid seismic zone in Arkansas, Missouri and Tennessee, according to the US Geological Survey. There is a "continuing concern for a major destructive earthquake" along the New Madrid fault, while California registered the greatest number of temblors in the country during the past week, the agency said.

#### 'Robust Enough'

"Nuclear power plants should not be built in seismically active areas," said Liz Apfelberg, a spokeswoman for Mothers for Peace. The San Luis Obispo, California-based group opposes extending PG&E's license to run the nearby Diablo Canyon plant about 185 miles (298 kilometers) northwest of Los Angeles.

"No nuclear plant can be built robust enough in an earthquake zone," Apfelberg said, citing the events in Japan.

Her group is challenging PG&E's application for a 20-year license extension, based on seismic issues. In 2008, US scientists discovered a new fault line near the plant that raised additional safety concerns, the Nuclear Regulatory Commission said.

#### 'Unique Concerns'

In February, a group of California lawmakers cited the seismic threats to Diablo Canyon in a letter to a federal commission examining the issue of handling nuclear waste.

"We believe the seismicity, and remaining uncertainty, of California creates unique concerns which deserve to be more closely examined," said the lawmakers, including Senator Sam Blakeslee, a Republican whose district includes San Luis Obispo.

"New evidence has emerged about previously undiscovered faults that may exist near or even beneath" the Diablo Canyon plant, said Blakeslee, a geophysicist who has studied earthquakes, in a separate statement. "The devastating events in Japan underscore the importance of addressing the seismic uncertainty surrounding California's nuclear power plants."

Diablo Canyon has been built to withstand "all environmental hazards in the region," including a tsunami and an earthquake with a magnitude of as much as 7.5 on the Richter scale, Kory Raftery, a PG&E spokesman, said by telephone.

#### Buildings Reinforced

All of the plant's equipment and buildings have been reinforced and tested to ensure it can withstand "far above the largest credible earthquake that could happen in our area," Raftery said. US scientists and regulators have determined that to be 6.0 to 6.5 in Richter magnitude, he said.

The California power station is one of a handful across the US that may pose seismic safety risks. Plants in the Northeast and South are also within known fault zones.

In Arkansas, two pressurized-water reactors at the Russellville Nuclear One plant supply 30 percent of the state's power, US Energy Information Administration data show. The plant is about 180 miles from the New Madrid fault line.

The power station employs about 950 people in the area and holds a significant place in the community, according to state Representative Andrea Lea, a Republican whose district includes the Russellville plant and whose husband works there.

"You'll never see a Kiwanis, Rotary or Lion's club without an employee of Arkansas Nuclear One involved," Lea said by telephone.

#### Less Powerful

The damage resulting from the Japanese temblor and tsunami isn't likely to be repeated in the area, said Haydar Al-Shukri, the director of the state earthquake center at the University of Arkansas at Little Rock. The most severe quake generated by the New Madrid fault would be no more than a magnitude of 8 on the Richter scale, about one tenth as powerful as the one that caused the disaster in Japan, he said.

In New York, Entergy Corp.'s two Indian Point reactors, about 24 miles north of New York City, are near the intersection of two seismic zones, identified in 2008 by scientists at Columbia University's Lamont-Doherty Earth Observatory. A magnitude 7 earthquake in the region is possible, based on features of the faults, according to the scientists.

The reactors, which supply 25 percent of the power used by New York City and suburban Westchester County, are designed to withstand at least a magnitude 6 temblor, said Jerry Nappi, a plant spokesman. Entergy and the NRC determined that the power station "is still safe under the worst-postulated earthquake" after the seismic study, he said.

#### Years of Inquiry

More inquiries by nuclear regulators in other countries are likely to follow the Japanese accident and will take years, said James Acton, an associate in the Nuclear Policy Program at the Carnegie Endowment in Washington.

"It's necessary to have a sober and careful reassessment of the seismology," he said in an interview. "There are valid safety concerns and it will be hard for the industry to rebut those arguments. But if additional safety costs become an economic issue, investors may not be willing to cough up the extra money."

Design similarities with the Daiichi reactors and the nature of the disaster that caused the problems there may ratchet up risks for US reactor operators, according to Hugh Wynne of Bernstein Research in New York.

#### 'Potential Hazard'

"Regulators, politicians and activist groups are likely to view power plants of any design faced with similar risks to constitute a potential hazard," Wynne said yesterday in a report. PG&E's Diablo Canyon and the San Onofre plant operated by Southern California Edison, a unit of Rosemead, California-based Edison International, are "particularly at risk" because of their seaside locations, Wynne said.



The San Onofre plant is designed to withstand a 7.0 magnitude earthquake, greater than the maximum "credible threat" for the region as determined by federal regulators and scientists, said Gil Alexander, a spokesman for Southern California Edison. The power station north of San Diego is protected by a seawall to deal with tsunamis as high as 30 feet, he said.

Cameco Corp., Canada's largest uranium producer, and power-plant builder Shaw Group Inc. yesterday fell the most in more than a year, after paring drops of 28 percent each. Shaw has a 20 percent stake in Westinghouse Electric Co., a nuclear-power technology provider controlled by Tokyo-based Toshiba Corp.

#### Uranium Drops

Uranium for immediate delivery fell \$7.49, or 11 percent, to \$60.75 a pound, according to MF Global data, the biggest one-day drop since at least July 2007. Cameco executives said uranium prices may fall further.

Many US plants rely on batteries to maintain reactor cooling systems in the event of a blackout, David Lochbaum, of the Union of Concerned Scientists, said today on a conference call with reporters. The back-up power supplies are less capable than those at the Daiichi plant, he said.

"We're more vulnerable" said Lochbaum, who has worked in US nuclear power stations for 17 years. "Many of our reactors are also vulnerable to hurricanes or ice storms."

—With assistance from Bradley Olson in Houston, Aaron Clark and Jim Polson in New York, Kim Chipman in Washington, Christopher Palmeri in Los Angeles.

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### **Capps Queries NRC On Nuclear Reactor Seismic Safety (NWZHAWK)**

#### **Congresswoman co-signs a letter requesting information on the features of US reactors**

By Ashley Schapittl, for Rep. Lois Capps

[Noozhawk](#), March 16, 2011

Rep. Lois Capps, D-Santa Barbara, joined colleague Rep. Edward Markey, D-Mass., on Tuesday to call for more information on the seismic safety features that are included in nuclear reactors in operation in the United States.

In the wake of the 9.0-magnitude earthquake and tsunami in Japan, the lawmakers sent a letter to Nuclear Regulatory Commission Chairman Greg Jaczko requesting information on the safety-significant structures, systems and components of America's nuclear reactors, including power plants' ability to sustain cooling function during a total station blackout, a situation that is affecting the Japanese reactors in distress.

"We are concerned that these reactors may not have the features necessary to withstand the sort of catastrophic earthquake and tsunami that has crippled several reactors in Japan and caused a meltdown and release of the highly radioactive materials contained within them," Capps and Markey wrote in the letter. "We are concerned that San Onofre, Diablo Canyon and possibly other nuclear reactors located in seismically active areas are not designed with sufficient levels of resiliency against the sort of earthquakes scientists predict they could experience."

According to analysis prepared by Markey's staff, there are eight nuclear reactors on the seismically active West Coast of the United States, and 27 nuclear reactors located near the New Madrid fault line in the Midwest. Additionally, there are 31 nuclear reactors in the United States that are of the same Mark 1 or Mark 2 design as those imperiled in Japan, and 12 of these are located in seismically active zones.

— Ashley Schapittl is press secretary for Rep. Lois Capps, D-Santa Barbara.

### **Nuclear Power Plants Are Safe, US Officials Say (THIRDAGE)**

By Kathryn Cusimano

[Third Age](#), March 16, 2011

Nuclear power plants are safe, US officials are saying today amid concerns over unstable power plants in Japan.

"All our plants are designed to withstand significant natural phenomena, like earthquakes, tornadoes, and tsunamis," Nuclear Regulatory Commission Chairman Gregory Jaczko said during a press conference at the White House.

Jaczko also insisted that the US is not likely to be affected by the problems at nuclear power facilities in Japan.

"[There is] a very low probability that there's any possibility of harmful radiation levels in the United States or in Hawaii or any other US territories," Jaczko said.

However, lawmakers continue to express concerns about established nuclear plants in the US, as well as potential legislation regarding new nuclear power projects.



"We just have to call a time out and examine whether or not those safety features necessary in the future are built into new nuclear power plants in our country," Democratic Rep. Ed Markey of Massachusetts told CNN. "Any plant that is being considered for a seismically vulnerable area in the United States should be reconsidered right now."

Markey called for tougher regulations on US nuclear plants, including requiring more cooling fluids to help shut down reactors if necessary and the distribution of potassium iodide to people who live within a 20-mile radius of a nuclear plant. Potassium iodide is taken to help block radiation. The Obama administration has yet to institute such regulations.

Tony Pietrangelo of the Nuclear Energy Institute insisted that nuclear plants in the US are "designed to withstand the most severe seismic events or earthquakes, as well as tsunamis where applicable, and flooding."

"The West Coast plants are designed to higher standards than the Central and Eastern United States," Pietrangelo said. "It is based on a historical look at what has happened in those areas, what soil or rock they sit in. They are very robust. I think, as we have seen in Japan, despite the magnitude of that earthquake, they hold up quite well."

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## **Reactors At Heart Of Japanese Nuclear Crisis Raised Concerns As Early As 1972, Memos Show (HUFFPOST)**

By Jim Morris And Aaron Mehta, The Center For Public Integrity

[Huffington Post](#), March 16, 2011

In the early 1970s, just as a number of reactors were about to be licensed, Stephen Hanauer, a senior member of the Atomic Energy Commission staff, suggested banning "pressure suppression" methods to contain radiation in the event of a meltdown -- methods built into General Electric's Mark I and Mark II containment designs as well as Westinghouse's ice condenser design. The advice was considered and disregarded.

"Steve's idea to ban pressure suppression containment schemes is an attractive one in some ways," Joseph Hendrie, then a deputy director with the AEC, wrote in a Sept. 25, 1972, memo. Hendrie acknowledged that alternative, "dry" containments -- featuring the towers or domes commonly associated with nuclear plants -- had the "notable advantage of brute simplicity in dealing with a primary blowdown, and are thereby free of the perils of bypass leakage."

But regulators ultimately decided that the technology developed by General Electric and Westinghouse was "firmly embedded in the conventional wisdom." Banning it, Hendrie wrote, "would generally create more turmoil than I can stand." His memo was obtained by the Union of Concerned Scientists through a Freedom of Information Act request.

The 85-year-old Hendrie, reached at his home on Long Island, N.Y., told the Center for Public Integrity that "there were some serious questions about the pressure suppression scheme, but it seemed in many ways like a good way to deal with a loss-of-coolant accident. To have declared it unacceptable when we'd already been licensing [plants] with it seemed more of a tearing up of a regulatory structure than was justified. When I said it would create more tumult than I can stand, I think I really meant it."



Hendrie's pragmatism eventually earned him a promotion as he later became the third chairman of the Nuclear Regulatory Commission, a position he held during the Three Mile Island accident, and regulators' sentiments allowed the design to proliferate around the world. He is now retired.

Today, three of six GE reactors at the Fukushima Daiichi plant in northeastern Japan are in danger of meltdown after a catastrophic earthquake and tsunami. And 31 aging GE reactors of the same design – 23 of them with Mark I containment systems and eight of them with Mark II—continue to operate in the US, raising concerns among both politicians and scientists. The Mark I containment is rectangular, the Mark II cylindrical. This NRC document explains the two in more detail.

The nuclear industry and the NRC said Monday they remain confident that the GE reactors, as well as the nine Westinghouse ice condenser reactors, are safe given the risks they face, and that Japan's crisis represents a worst-case scenario.

"The BWR Mark 1 reactor is the industry's workhorse with a proven track record of safety and reliability for more than 40 years," GE said in a statement. "Today, there are 32 BWR Mark 1 reactors operating as designed worldwide. There has never been a breach of a Mark 1 containment system."

NRC Chairman Gregory B. Jaczko told reporters Monday that all US nuclear plants "are designed to withstand significant natural phenomena like earthquakes, tornadoes and tsunamis. We believe we have a very solid and strong regulatory structure in place right now."

But industry watchdogs see the fateful decision regulators made almost 40 years ago – to choose political and economic pragmatism over tougher safety standards – as endemic in the culture of the NRC as it deals with the prevention of low-probability, high-consequence accidents.

The decision was based largely on cost, said Jim Riccio, a nuclear policy analyst with Greenpeace. The pressure suppression containment systems, which use water or extreme cold to keep radiation from leaking into the environment, were cheaper than dry systems, which require construction of the massive domes or towers. But they were inherently less safe, Riccio said.

"They were designed to withstand a pipe break, not a meltdown," he said. It wouldn't take a major earthquake or a tsunami to knock out primary and backup power and push the systems to the breaking point; a hurricane or tornado could suffice.

#### VULNERABLE TO SEISMIC EVENTS

A 1975 report for GE by a team of scientists and engineers found that the company's boiling water reactors were more vulnerable to seismic events than pressurized water reactors – such as Three Mile Island – designed by Westinghouse and other firms.

"The PWR [pressurized water reactor] design is inherently more seismic resistant because of lower reactor vessel placement and the need to design for larger LOCA loadings," the report said. LOCA is an acronym that stands for loss of coolant accident – the type of accident triggered by the earthquake and tsunami in Japan. GE's research team said it would push to make the company's newer reactors more able to withstand earthquake-related stresses.

The report added that "because of phenomena recently discovered all BWR [boiling water reactor] containment types are undergoing extensive additional analyses to evaluate structural adequacy." It said Mark I and Mark II containments "are likely to be redesigned and retrofitted."

In 1986, former NRC official Harold Denton told a group of utility executives that, according to commission studies, GE Mark I reactors had "something like a 90 percent probability of that containment failing" under accident conditions.

On top of concerns about the boiling water reactors are worries about relicensing, the storage of spent fuel, and the design of the next generation of plants.

Relicensing: On March 10, one day before the earthquake in Japan, the NRC voted to relicense one of the GE Mark I plants – the 39-year-old Vermont Yankee Nuclear Power Station near Brattleboro, Vt. – for an additional 20 years. Last year, the Vermont Senate voted overwhelmingly against licensing of the plant beyond 2012, noting that it has suffered a litany of safety problems, including leaks of radioactive tritium and the collapse of a cooling tower. Vermont is the only state that has the authority to approve a reactor operating license.

Riccio said the NRC's action was predictable. About 20 years ago, he said, the agency "lowered the bar [for relicensing] so low you can't even trip over it. We're renewing aged reactors' licenses with a rubber stamp."

NRC spokesman Scott Burnell said the decision to extend Vermont Yankee's life through March 2032 came after lengthy NRC reviews. "In the case of Vermont Yankee, not only did we have more than two years of intense technical review, we also had a very deliberate, very appropriate legal review that lasted until last Thursday," he said. "That would not meet most people's definition of a rubber stamp." It was during that review that some of the most serious tritium leaks at the plant occurred.



Burnell added that the decision does not guarantee that the plant, operated by Entergy Nuclear Operations, "has a blank slate to continue running" for two more decades. It will have meet rigorous safety standards at all times, he said.

**Spent Fuel:** Spent fuel rods at Fukushima Daiichi may have burned during the most recent fire at the plant, releasing radiation, Japanese officials reported Monday. Critics in the US say that too much spent fuel at reactors is packed tightly into onsite pools – awaiting a permanent storage site – rather than being moved as quickly as possible into "dry casks," which are less vulnerable to accidents or terrorist attacks.

"Current onsite storage plans place spent fuel in wet pools until the pools are essentially filled and then intermittently transfer spent fuel to dry casks when needed to free up space for the next discharge from the reactor," David Lochbaum, director of the Union of Concerned Scientists' Nuclear Safety Project, wrote in a submission to the Blue Ribbon Commission on America's Nuclear Future last August. "Responsible onsite storage accelerates the transfer of spent fuel to dry casks to maintain the inventory within the wet pools near minimal amounts."

Burnell said the NRC believes the current method of spent fuel storage is safe. "The combination of both spent fuel pools and dry-cask storage is an appropriate and acceptable means of safely and securely storing spent fuel until such time as there is a national destination for that material," he said.

**New Reactors:** Just days before the earthquake in Japan, Rep. Edward Markey of Massachusetts, the top Democrat on the House Natural Resources Committee, sent a letter to NRC chairman Jaczko, asking the agency to withhold final approval of a new Westinghouse reactor design due to "serious safety concerns." Markey wrote that an NRC expert had identified "potential loopholes, which, if left open, allow designs for unsafe reactors to go forward despite the risk that an earthquake or aircraft impact could result in a catastrophic core meltdown."

Fourteen reactors based on the design – which has never been built – are under development in Alabama, Florida, North Carolina, South Carolina and Georgia.

The Nuclear Energy Institute, a trade association for the nuclear power industry, said in a statement that "Japan is facing what can literally be considered a 'worst case' disaster and, so far, even the most seriously damaged of its 54 reactors has not released radiation at levels that would harm the public. That is a testament to their rugged design and construction, and the effectiveness of their employees and the industry's emergency preparedness planning."

In a conference call with reporters on Monday, Lochbaum, of the Union of Concerned Scientists, hinted at another possible problem. "The primary problem the [Fukushima] plant faced was loss of power and backup power," he said. "The situation that plant faced was having eight hours of battery [capacity] and losing that."

"In this country, most of our reactors are only designed with battery capacity for four hours, so we're more vulnerable in those situations. While many of our plants may not be vulnerable to the one-two of earthquake and tsunami, many of them are in situations where hurricanes or tornadoes or ice storms or a tree in Cleveland could cause a blackout that would put us in the same situation."

German and Swiss reactors have had the most redundant emergency systems for an accident involving an uncooled core.

In 1975, a team of engineers and scientists attempting to limit the risks of GE's containment systems noted that the NRC requires that for any single accident "which might result in an uncooled core, two emergency cooling systems must be available, either of which could by itself cool the shutdown core, and both of which have considerable internal redundancy."

Similarly, Japanese authorities allowed nuclear plants with only two emergency cooling systems – both of which have proven unreliable in the events triggered by the earthquake and tsunami.

But German and Swiss authorities as far back as the early 1970s required three backups. "The argument runs that one backup system could at any time be out of action, because of repair work, or surveillance testing, that a second could fail to work because of an unknown defect, and that a third would then be available if needed," the team working for GE noted.

On Tuesday, Germany decided to shut down its seven oldest nuclear power plants at least temporarily, pending a safety review.

Hendrie, the former NRC chairman, remains a believer in nuclear power. All technologies have some risk, he said. "The Japanese experience is apparently going to be pretty bad, but mankind over the centuries has devised technologies that turned out to be very useful to mankind, developed them, taken some lumps from accidents and mishaps, made corrections to the technology and moved ahead," he said. "A lot of coal miners die. We pollute the Gulf of Mexico. So, all these technologies have their unhappy connections. And I wouldn't slight the need for strong regulations. But I think it's reasonable and, indeed, essential for us to move ahead and keep on with nuclear energy development."

## **Entergy Shares Slide On Nuclear Energy Concerns (BSWK)**

[BusinessWeek](#), March 16, 2011



Shares of nuclear power plant owner Entergy Corp. fell Tuesday as Japan's worsening nuclear crisis raised safety concerns about the industry.

**THE SPARK:** Radiation has leaked from a crippled nuclear plant in tsunami-ravaged northeastern Japan after a third reactor was rocked by an explosion Tuesday and a fourth caught fire. The government warned anyone nearby to stay indoors to avoid exposure. Some 70,000 people have already been evacuated from a 12-mile (20-kilometer) radius and 140,000 remain in the zone for which the new warning was issued.

Prime Minister Naoto Kan said radiation has spread from four reactors of the Fukushima Dai-ichi nuclear plant in Fukushima province, one of the hardest-hit in Friday's 9.0-magnitude earthquake and the ensuing tsunami that has killed more than 10,000 people.

**THE BIG PICTURE:** The nuclear crisis in Japan has raised global concerns about the safety of nuclear power at a time when it has seen a resurgence as an alternative to fossil fuels. Switzerland has ordered a freeze on new plants, while Germany has suspended a decision to extend the life of its nuclear plants. The United States has said it will try to learn from the Japanese crisis but that events will not diminish the US commitment to nuclear power.

New Orleans-based Entergy owns or manages 12 nuclear plants in the US, including the Vermont Yankee nuclear facility in Vermont. Earlier this month, federal regulators approved its request for a 20-year license extension that would allow it to operate until 2032.

**THE ANALYSIS:** Jefferies analyst Debra Bromberg said that concerns stemming from the disaster in Japan are overblown, and that US regulators likely will focus on improving backup systems at US facilities rather than requiring major modifications. The situation in Japan does not "seem to be terribly significant" for Entergy, Bromberg said.

Bromberg raised Entergy's rating to "Buy" from "Hold" and increased her price target to \$77.50 from \$75 per share.

**SHARE ACTION:** Entergy shares lost \$1.44, or 2 percent, to \$68.65 in morning trading. That decline is on top of the stock's nearly 5 percent drop on Monday.

## **OVERNIGHT ENERGY: Top Nuke Regulator Faces Congress (HILL)**

By Andrew Restuccia and Ben Geman

[The Hill](#), March 16, 2011

**State of Play:** Lawmakers will publicly question the country's top nuclear energy regulator Wednesday for the first time since a massive earthquake and resulting tsunami led to a nuclear crisis in Japan.

The Obama administration and pro-nuclear lawmakers have for the most part stood behind calls to expand US nuclear power, while emphasizing that policymakers will learn from the Japanese crisis.

But frenzied efforts to prevent large-scale radiation releases from stricken reactors in Japan are creating questions about the safety of US reactors and the industry's push to build new plants.

Nuclear Regulatory Commission Chairman Gregory Jaczko made the rounds on Capitol Hill Monday in an attempt to reassure lawmakers that US nuclear reactors can withstand major natural disasters. He also appeared at the daily White House press briefing.

"Right now, we continue to believe that nuclear power plants in this country operate safely and securely," Jaczko said during the White House briefing.

But Senate Majority Leader Harry Reid (D-Nev.) said Tuesday that policymakers must be cautious about nuclear power in light of the disaster in Japan.

"I don't think we should just eliminate the need for nuclear power, but I think it's something we have to look at very calmly and deliberately," he said.

Expect Republicans and Democrats to clash over nuclear safety.

Top Democrats on the House Energy and Commerce Committee have called for an investigation into whether the country's nuclear plants can withstand major earthquakes and tsunamis.

But House Republicans on the panel, who largely support a major expansion of nuclear power, have warned against a rush to judgment on the safety issue. The lawmakers have called for streamlining nuclear power licensing at the NRC. Rep. Ed Whitfield (R-Ky.), the chairman of the panel's Energy and Water subcommittee, told [The Hill](#) Monday that he plans to push Jaczko on the issue in a hearing Wednesday.

Jaczko will testify alongside Energy Secretary Steven Chu at the House hearing.

Chu on Tuesday said US standards are robust. "The American people should have full confidence that the United States has rigorous safety regulations in place to ensure that our nuclear power is generated safely and responsibly," Chu told a House panel Tuesday.



ON TAP WEDNESDAY:

Senate briefing on Japanese nuclear crisis

The Senate Environment and Public Works Committee will hold a briefing to hear from Nuclear Regulatory Commission Chairman Gregory Jaczko. He will discuss the "the ongoing crisis associated with nuclear power facilities in Japan, as well as the potential ramifications for the United States," an advisory states.

The committee will also hear from officials with the Nuclear Energy Institute, the industry's main trade group, and the Union of Concerned Scientists.

House panel to talk nukes too

Jaczko and Energy Secretary Steven Chu will testify before the House Energy and Commerce Committee. The hearing was initially planned to discuss the two agencies' fiscal year 2012 budget plans, but look for discussion of the Japanese nuclear crisis to dominate.

## **US Committed To Nuclear Power But Wants To Learn From Japan Crisis, Top US Official Says (LAT)**

**As Japan deals with leaking radiation and crippled reactors following an earthquake and tsunami, Energy Secretary Steven Chu says the US is set on including nuclear power in its energy mix. 'But the administration is committed to learning from Japan's e**

By Michael Muskal, Los Angeles Times

[Los Angeles Times](#), March 16, 2011

The United States remains committed to nuclear power, Energy Secretary Steven Chu said on Tuesday even as Japan sought to contain the nuclear danger at the Fukushima Daiichi plant.

Speaking before a House Appropriations Committee panel that is looking at the department's budget requests, Chu said his department had sent 34 people and 7,200 pounds of equipment to the scene of the crippled reactors from which radiation had leaked.

The secretary, a Nobel Prize winner in physics, reaffirmed the administration's position that the United States will learn from Japan's difficulties but remained committed to safe nuclear power as part of an energy mix.

"The American people should have full confidence that the United States has rigorous safety regulations in place to ensure that our nuclear power is generated safely and responsibly," Chu said. "Information is still coming in about the events unfolding in Japan, but the administration is committed to learning from Japan's experience as we work to continue to strengthen America's nuclear industry."

"To meet our energy needs, the administration believes we must rely on a diverse set of energy sources including renewables like wind and solar, natural gas, clean coal and nuclear power," he said. "We look forward to a continued dialogue with Congress on moving that agenda forward."

Chu told the panel that US officials had included the danger from earthquakes and tsunamis in formulating their energy and safety plans.

The administration is seeking to add \$36 billion to the Energy Department's loan-guarantee authority to help finance the development of the first new US reactors in decades. The Obama administration has pledged an \$8.3-billion guarantee to Southern Co. for two planned reactors in Georgia. But that project still needs Nuclear Regulatory Commission approval.

Chu also expressed the administration's support for Japan's efforts to deal with last week's magnitude 9.0 earthquake and ensuing tsunami.

As part of the US help, Chu said, the department is "positioning Consequence Management Response Teams at US consulates and military installations in Japan. These teams have the skills, expertise and equipment to help assess, survey, monitor and sample areas. They include smaller groups that could be sent out to gather technical information in the area."

"We have sent our Aerial Measuring System capability," he said, "including detectors and analytical equipment used to provide assessments of contamination on the ground."

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## **Energy Chief: US Will Learn From Japan Disaster (WP/AP)**

[Associated Press](#), March 16, 2011

WASHINGTON – The Obama administration's most vocal advocate for nuclear power said Tuesday that the nuclear disaster unfolding in Japan will eventually help the United States strengthen safety at its 104 reactors.



Energy Secretary Steven Chu told a House panel that "the American people should have full confidence that the United States has rigorous safety regulations in place to ensure that our nuclear power is generated safely and responsibly." But he said that the administration "is committed to learning from Japan's experience."

Chu said the initial step is to help the Japanese government cool down the damaged reactors and to stop the leaking radiation. After the reactors are secure, he said, the next step would be to understand what happened, and then assess whether US reactors have similar vulnerabilities. Under questioning, he said that reactors in the US are designed above what would be required to withstand a worst-case earthquake and tsunami.

The Energy Department has sent 34 people and 17,150 pounds of equipment to Japan to help monitor and assess the situation at a Japanese nuclear plant damaged by the earthquake and tsunami.

Chu said he was up early Tuesday morning evaluating atmospheric models produced by his department's national laboratories that predict where radiation could migrate.

## **Chu: US Can 'Learn' From Japan (POLITCO)**

By MJ LEE

[Politico](#), March 16, 2011

Energy Secretary Steven Chu defends the administration's stance on nuclear energy in light of the disaster in Japan ...In a hearing that was meant to focus on President Obama's budget proposal, Energy Secretary Steven Chu found himself defending the administration's stance on nuclear energy in light of the disaster in Japan.

Chu told a House panel that the United States "needs a diverse supply of energy" Tuesday morning. "We cannot depend on a single source of energy both for electricity, and, might I add, for transportation fuel," he said.

He also said that the United States can "learn a lesson" from Japan by reviewing the safety of nuclear reactors. "I still feel that it's probably premature to say anything but to say that we will learn from this," he said.

The energy secretary sought to reassure members of Congress that when the earthquake hit Japan, the Energy Department examined what impact might be felt on the West Coast, where nuclear plants are in seismically active areas.

Chu said that after Japan investigates the cause of failures at its nuclear reactors, the United States "will proceed and try to design or look at [whether] there is something we have overlooked over in the United States."

## **Energy Secretary Steven Chu Says Obama Administration Remains Committed To Nuclear Power (LAT)**

**Steven Chu, testifying before a House subcommittee, says it's too early to assess how the crisis at a Japanese nuclear plant will affect plans to develop more US nuclear power facilities. But, the Energy secretary says, 'the administration believes we must**

By Kathleen Hennessey, Washington Bureau

[Los Angeles Times](#), March 16, 2011

WASHINGTON -- Energy Secretary Steven Chu on Tuesday restated the Obama administration's commitment to keeping nuclear power in the mix of energy sources under development in the US, but declined to discuss how the evolving nuclear disaster in Japan might affect that effort.

"The administration believes we must rely on a diverse set of energy sources, including renewables like wind and solar, natural gas, clean coal and nuclear power," Chu said in testimony before a House subcommittee. "The administration is committed to learning from Japan's experience as we work to continue to strengthen America's nuclear industry."

Chu echoed assurances made by the White House on Monday that nuclear facilities in the US are maintained at the highest safety standards. Those near the fault lines and the coasts are designed to withstand the double blow of an earthquake and tsunami that rocked reactors in Japan and led to the release of radioactive material, he said.

More than 30 experts from the Department of Energy have been deployed to assist Japanese officials still struggling to stabilize reactors and assess potential fallout, Chu said. Emergency response experts stationed at US consulates and military installations will assist with surveying and sampling. The US has sent more than 17,000 pounds of monitoring equipment intended to provide early detection of contamination on the ground.

"We can be assured that whatever does get released, we can give people fair warning," Chu told the energy and water subcommittee of the House appropriations committee.

The disaster in Japan vividly illustrates public fears about the safety of nuclear power at a time when the Obama administration is accelerating its push for nuclear expansion. No new reactors have been developed since 1979, when investors and the public veered away from nuclear power after the partial meltdown at the Three Mile Island facility in Pennsylvania.



But spurred by a shift in policy, the industry has seen a recent revival. That expansion was always on uncertain footing and the incident in Japan would likely further complicate those efforts.

Of the first wave of four new nuclear projects, just one remains clearly on track – two new reactors at the Vogtle plant near Augusta, Ga., Chu told lawmakers, adding that investors will likely look even harder at whether nuclear plants will be safe.

Asked whether he thought the crisis at the Japanese reactor would put the brakes on nuclear expansion, Chu demurred.

"I still feel it's probably premature to say anything other than, 'We will learn from this and all forms of energy do present risks,'" Chu said.

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## **Energy Secretary Defends US Nuclear Industry (CNN)**

[CNN](#), March 16, 2011

Washington (CNN) -- Energy Secretary Steven Chu sought to reassure Congress on Tuesday that America's nuclear power plants are sufficiently protected against the kind of disaster now facing Japan.

He also insisted that, contrary to assertions of many skeptics within the environmental movement and elsewhere, nuclear power needs to play a key role in the development of a more balanced US energy policy.

Chu said federal authorities responsible for overseeing US nuclear plants have accounted for combined earthquake and tsunami scenarios similar to what led to the crisis in Japan.

"The American people should have full confidence that the United States has rigorous safety regulations in place to ensure that our nuclear power is generated safely and responsibly," Chu told members of a House subcommittee. Officials are "committed to learning from Japan's experience as we work to continue to strengthen America's nuclear industry."

The secretary said that "whenever there is a reactor near a (potential) earthquake site, we look to what's the maximum size of that particular earthquake that geologists (say) can ever happen, and we design considerably above that."

President Barack Obama's fiscal year 2012 budget request includes \$36 billion in loan guarantee authority to help spur growth in nuclear industry. The push to expand such power has gained significant momentum in recent years, a reversal in attitudes adopted after the 1979 Three Mile Island disaster in Pennsylvania.

Members of the House panel expressed a need for caution in moving forward with nuclear power but appeared generally supportive of the administration's stance.

"As a country, I can't imagine how we go forward ... if we don't have nuclear in the mix," said Rep. Chakah Fattah, D-Pennsylvania.

Other countries have reacted to the Japanese disaster with a greater sense of alarm. Thousands of German demonstrators urged their leaders Monday night to shut down nuclear power plants in their country. Chancellor Angela Merkel has announced a three-month moratorium on the extension of the operation periods for nuclear plants in her country.

Chu noted Tuesday that his department has more than 30 people on the ground in Japan to assist with disaster response operations.

"Officials from the Department of Energy, the Nuclear Regulatory Commission and other agencies have maintained close contact with Japanese officials and have provided the Japanese government with expertise in a variety of areas," he said.

The secretary indicated that US authorities are closely monitoring radioactive emissions in Japan and analyzing potential outcomes "based on a variety of scenarios."

Washington has sent "a great deal" of monitoring equipment to Tokyo in order to help track radiation and provide "fair warning" if major metropolitan areas are endangered, he said.

CNN's Alan Silverleib contributed to this report.

## **Chu Says No Need To Suspend New US Nuclear Plant Permits (BLOOM)**

By Jim Snyder

[Bloomberg News](#), March 16, 2011

Energy Secretary Steven Chu said the US doesn't need to suspend work on new nuclear permits while investigating the crisis in Japan, where officials are struggling with reactors damaged by an earthquake and tsunami.

The Nuclear Regulatory Commission review is long enough that revisions can be made to reflect findings from the examination of failures at Tokyo Electric Power Co.'s Daiichi nuclear station, he said.

"If you look at the process in which the NRC approves going forward with construction projects and nuclear reactors, it's a thoughtful process," Chu told reporters today after appearing before the House Appropriations subcommittee on energy and water development. "It's a multiyear process and because of its very nature, I think these things can proceed."



Lawmakers set aside plans today to review the Energy Department's 2012 budget and focused on how US nuclear reactors withstand what Chu referred to as the "double-barrel whammy" that crippled reactors at the Fukushima Daiichi plant and raised the threat of a catastrophic radiation leak.

"We need to take a hard look at any lessons learned from this tragedy that can further improve the safety of our reactors," Chu said during the subcommittee hearing.

US power-plant developers are required by regulators to design plants that can survive worst-case scenarios, such as earthquakes and tsunamis, said Chu, who won the Nobel Prize for physics in 1997.

The administration sent equipment and nuclear experts to Japan to provide advice and technical assistance, Chu said.

White House press secretary Jay Carney said the NRC is constantly reviewing safety at currently operating plants and has the authority to order a shutdown of any facility that doesn't meet standards or to upgrade safety procedures.

He declined to comment on the German government's decision to take its seven oldest nuclear reactors offline as part of a nationwide safety review. The NRC is "constantly" evaluating standards, "and that would apply to old reactors as well as newer ones."

Nuclear power was defended by members of the energy and water development subcommittee, including Representative Rodney Frelinghuysen, a New Jersey Republican and chairman of the panel.

Chu reiterated the administration's support for nuclear power and said new reactor designs similar to Southern Co. (SO)'s Vogtle unit are safer because they rely less on electric power to pump cooling water to prevent overheating.

The planned Vogtle plant, which received \$8.3 billion in loan guarantees from the Energy Department, would use the AP 1000 reactor design by Toshiba Corp. (6502)'s Westinghouse Electric Co.

The reactor "relies on the natural forces of gravity, natural circulation and compressed gases to keep the core and containment from overheating," according to the company's website.

Chu said the new design doesn't require "numerous backup systems."

The Nuclear Regulatory Commission is reviewing the permit application for the Vogtle plant.

Carney said Obama "believes that we need to proceed responsibly with the safety and security of the American people in mind and, if we do that, that nuclear can continue to be an element in our energy arsenal."

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## **UPDATE 2-US Energy Chief: Don't Delay New Nuclear Plants (REU)**

By Tom Doggett and Jeff Mason

[Reuters](#), March 16, 2011

Full-text stories from Reuters currently cannot be included in this document. You may, however, click the link above to access the story.

## **US: Japan Nuke Crisis 'No Concern' For US Health (AFP)**

[AFP](#), March 16, 2011

WASHINGTON (AFP) – US Energy Secretary Steven Chu said Tuesday that quake-battered Japan's nuclear crisis posed "essentially no concern" for the health of people in the United States.

"I think there's essentially no concern in terms of the health effects on American shores," Chu told reporters after testifying to a key congressional committee on a range of issues including Japan's damaged Fukushima atomic plant.

He had been asked about report of people in the United States fearfully buying up medicine designed to stave off radiation poisoning.

"I think they really shouldn't be doing those things, quite frankly, (but) it's a free country," said Chu.

## **Radiation Exposure: Why US Is Confident West Coast Isn't In Danger (CSM)**

[Christian Science Monitor](#), March 16, 2011

Radiation exposure fears appear to have led to a run on iodine tablets in the US. But federal officials say that is an overreaction. They say weather patterns would disperse radiation from Japan to the point that it would present no health risk by the time it hits American shores.

Washington

Japan's nuclear crisis has made many people in the US concerned that radioactive contamination might reach American shores. Potassium iodide – a compound that if ingested guards against some of the most dire side effects of radiation exposure – is in short supply in some areas, particularly the West Coast.



Anbex Inc., a Virginia firm that is a leading supplier of potassium iodide, sold out its stockpile of tablets over the weekend. The company's website notes that new product is not expected until April 18.

But US officials on Tuesday said that they believe the worry driving this demand is an overreaction.

"I think there's essentially no concern in terms of the health effects on American shores," Secretary of Energy Steven Chu told reporters after testifying before the House Energy and Commerce Committee on his department's budget.

At the White House, spokesman Jay Carney made the same point, repeating a statement made earlier by a top Nuclear Regulatory Commission official.

"You aren't going to have any radiological material that, by the time that it traveled those large distances, could present any risk to the American public," said Mr. Carney.

Still, radiation emitted by the stricken Fukushima Daiichi nuclear plant has been detected by US Navy ships 100 miles northeast of ground zero. Tokyo, to the south, has seen an increase in radiation levels. How can US officials be so certain that San Francisco won't feel the after effects if things get worse?

The answer to that question may be time, and distance. It would take days for prevailing winds to blow radioactive material from Japan to the US. Over that period, with that far to travel, rain and wind would disperse the radioactivity, according to the NRC.

Using an atmospheric modeling tool developed by the National Oceanic and Atmospheric Administration, weather expert Jeff Masters has attempted to predict where any potential radioactive plume from the Fukushima Daiichi plant might go. The vast majority of times he runs the data, the plume stays over water for five to seven days prior to landfall. On his blog, "Weather Underground," he writes that such a long time spent over the ocean means that the vast majority of radioactive particles would settle naturally or be washed out of the sky by precipitation.

"It is highly unlikely that any radiation capable of causing harm to people will be left in the atmosphere after seven days and 2000+ miles of travel distance," Dr. Masters writes.

The Chernobyl disaster, which involved a release of much more radiation than has been the case so far in Japan, spread significant contamination about 1,000 miles, notes Masters.

Of course Chernobyl, in what is now Ukraine, occurred in the heart of Europe, so that contamination had serious health repercussions for nearby populations.

In his congressional testimony, Secretary Chu said he was up early Tuesday morning looking at atmospheric models produced by his department to see where radiation might travel. He added that the crisis in Japan will eventually help the US strengthen the safety of its own reactors.

The administration "is committed to learning from Japan's experience," he said.

Chu and other officials have said that the White House remains committed to the development of a diverse set of energy sources, including nuclear power. No new US reactors have come online since the Three Mile Island accident of 1979.

Pressed as to whether Japan's troubles could stall nuclear power's resurgence in the US, Chu said "I still feel it is probably premature to say anything other than, 'We will learn from this all forms of energy do present risks.'"

## **Japanese Plant Poses Little Threat To US — For Now (AP)**

[Associated Press](#), March 16, 2011

It's a big ocean between northeastern Japan and the United States and thousands of miles from the crippled nuclear power plant to much of Asia. That means there's little chance — at least for now — that radiation from the shattered reactors could pose a serious threat to the wider world.

Experts say the amount of radioactivity emitted by the facility has been relatively minor and should dissipate quickly over the Pacific Ocean.

"Every mile of ocean it crosses, the more it disperses," said Peter Caracappa, a radiation safety officer and clinical assistant professor of nuclear engineering at Rensselaer Polytechnic Institute in Troy, N.Y.

The only people at immediate risk are workers inside the plant and the people living closest to it. The danger of radiation exposure elsewhere is minuscule — unless the plant sustains a complete meltdown, which would sharply escalate the dangers.

Japanese officials told the International Atomic Energy Agency on Tuesday that a fire had broken out in a fuel storage pond where used nuclear fuel is kept cool and that radiation had been "released directly into the atmosphere."

If the water level in such storage ponds drops to the level of the fuel, a worker standing at the railing looking down on the pool would receive a lethal dose within seconds, according to a study by the Millstone nuclear plant in Connecticut.

Such intense radiation can prevent workers from approaching the reactor or turn their tasks "into suicide missions," said David Lochbaum, a nuclear engineer who heads the nuclear safety program of the Union of Concerned Scientists.



Next in the line of danger would be those who live within a 20-mile radius. Areas around the plant have been evacuated for that reason.

"The odds of someone outside the plant getting an acute injury — sick in the next couple of weeks — is close to zero," said John Moulder, a professor of radiation oncology at the Medical College of Wisconsin in Milwaukee who studies the effects of radiation exposure.

The radioactive particles probably contain materials linked to cancer in high doses, including cesium and iodine. The long-term cancer risk for nearby residents will depend on exposure and cleanup efforts, Moulder said.

Radioactive cesium and iodine also can combine with the salt in sea water to become sodium iodide and cesium chloride, which are common elements that would readily dilute in the wide expanse of the Pacific, according to Steven Reese, director of the Radiation Center at Oregon State.

Winds in the area are currently blowing toward the coast because of a winter storm. But that will change to a brisk wind blowing out to sea at least through Wednesday, he said by telephone.

Still, the forecast offered little comfort to those living in the area — and in nearby countries such as Russia.

The Russian Emergencies Ministry said it was monitoring radiation levels and had recorded no increase.

Many Russians, however, distrust the reassurances, perhaps remembering the Chernobyl disaster 25 years ago and how long it took the Soviet government to reveal the true dangers of the radiation.

"The mass media tells us that the wind is blowing the other way, that radiation poses no threat. But people are a mess," Valentina Chupina, a nanny in Vladivostok, said in a comment posted on the website of the newspaper Delovoi Peterburg. "They don't believe that if something happens we'll be warned."

The news portal Lenta said that in addition to potassium iodide and instruments used to measure radiation, people in the Far East also were stocking up on red wine and seaweed, which they believed would offer protection from radiation.

Even so, many experts here say that this emergency is nowhere near the level of Chernobyl, the worst nuclear disaster in history.

For one, that reactor's core contained graphite that caught fire, which blasted radiation high into the air and into wind currents that carried it long distances. The Japanese core is metal and contains no graphite, experts said.

The Chernobyl plant also lacked a heavy shell around the reactor core. And the incident there happened quickly, with little time to warn nearby residents.

So far, the radiation released in Japan has not reached high altitudes, said Kathryn Higley, director of the Oregon State University Department of Nuclear Engineering and Radiation Health Physics.

"In addition, radioactive material is sticky. It has a static charge," she said, so it will stick to the sides of buildings, and "rain is going to knock it down."

As a precaution, the World Meteorological Organization has activated specialized weather centers to monitor the situation. Those centers, in Beijing, Tokyo and Obninsk, Russia, will track any contaminants.

Meanwhile, the International Atomic Energy Agency said a single reading at one location in the Japanese plant recorded levels of 400 millisieverts, or 40 rems, per hour.

"You start getting radiation sickness at around 100 rems" — nausea and vomiting. Damage to blood cells can show up two to four weeks later, said Dr. Fred Mettler, a University of New Mexico radiologist and adviser to the United Nations on radiation safety. He led an international study of health effects after the Chernobyl disaster.

Levels were much lower at a plant gate, and "if you get further away from that, the population got a very small dose if anything," said Kelly Classic, a radiation physicist at the Mayo Clinic and a representative for the Health Physics Society, an organization of radiation safety specialists.

The US Nuclear Regulatory Commission says doses of less than 100 millisieverts, or 10 rems, over a year are not a health concern.

By comparison, most people receive about three-tenths of a rem every year from natural background radiation, according to the US Environmental Protection Agency. A chest X-ray delivers about .1 millisieverts, or .01 rem of radiation; a CT scan of the abdomen and pelvis is about 14 millisieverts, or 1.4 rems.

If a full meltdown occurs at the Japanese plant, the health risks become much greater — with potential release of uranium and plutonium, said Dan Sprau, an environmental health professor and radiation safety expert at East Carolina University in Greenville, N.C.

"If that escapes," Sprau said, "you've got a whole new ball game there."

## Japan Crisis Spikes Demand For Radiation Pills (AP)

Associated Press, March 16, 2011

WASHINGTON – Japan's nuclear crisis is spiking demand in the US and a few other places for a cheap drug that can protect against one type of radiation damage — even though the risk is only in Japan.

Health agencies in California and western Canada warned Tuesday that there's no reason for people an ocean away to suddenly stock up on potassium iodide. Some key suppliers say they're back-ordered and are getting panicked calls from potential customers.

"Tell them, 'Stop, don't do it,'" said Kathryn Higley, director of radiation health physics at Oregon State University.

"There's a lot of mythology about the use of potassium iodide," added Dr. Irwin Redlener, a pediatrician and disaster preparedness specialist at Columbia University. "It's not a radiation antidote in general."

The pill can help prevent radioactive iodine from causing thyroid cancer, for which children are most at risk in a nuclear disaster.

Japan's Nuclear Safety Agency has stored potassium iodide to distribute in case of high radiation exposure, and the US Navy is giving it to military crews exposed to radiation as they help with relief efforts in Japan. But government and independent experts say that Americans have little to fear from any radiation released by the damaged Japanese nuclear plant.

"You just aren't going to have any radiological material that, by the time it traveled those large distances, could present any risk to the American public," said Nuclear Regulatory Commission Chairman Greg Jazcko.

Other governments echoed that warning.

"We do not expect any health risk following the nuclear reactor releases in Japan, nor is the consumption of potassium iodide tablets a necessary precaution," British Columbia's health ministry told the public Tuesday.

In Russia, where memory of the very different Chernobyl disaster 25 years ago is strong, media reports said pharmacies in Vladivostok, a major port just west of Japan, had run out of the pills.

"The mass media tells us that the wind is blowing the other way, that radiation poses no threat. But people are a mess," Valentina Chupina, a nanny in Vladivostok, said in a comment posted on the website of the newspaper Delovoi Peterburg. She said people don't believe the government will warn them if something goes wrong so potassium iodide is being bought up in the pharmacies.

In the US, whether people fear fallout from Japan or a nuclear accident here, potassium iodide seems to have become something of a hot commodity.

"I feel strongly there is a high likelihood we will have radiation coming from Japan," said Tammy Lahutsky as she waited at the Texas Star Pharmacy in Plano, Texas on Tuesday. There's not, but she bought six bottles for herself and a friend, anyway.

"I can't tell you how many women are calling up in tears," said Alan Morris, president of Anbex Inc., a leading supplier. His order line ringing in the background, Morris said the company had sold out of more than 10,000 14-pill packages and doesn't expect more supply until April.

Internet seller NukePills.com donated 50,000 potassium iodide tablets to a physician-run disaster-relief team in Japan, pills not suitable for US retail sale because of packaging issues and expiration dates. Regardless, "these pills really needed to go where people were in the most dire need," said company president Troy Jones. Meanwhile, he said he's taken over 6,000 orders since Friday and is selling a liquid version until more pills become available.

What does this drug do?

Potassium iodide, a salt also known as KI, has just one use: It shields the thyroid from radioactive iodine. It blocks no other type of radiation, and protects no other body part.

The drug, either pill or liquid form, is sold over-the-counter and is considered safe, although some people may experience allergic reactions.

Potassium iodide is most important for children and pregnant women, because a growing thyroid is much more active and more likely to absorb radioactive iodine, said Columbia's Redlener. It should be given within a few hours of radiation exposure — but isn't considered that useful for people over age 40.

At the same time, the crisis renews a question that the US government has debated for years: Should people keep small supplies of potassium iodide on hand in case of a local radiation emergency?

The federal government already stockpiles the drug, and offers enough for states also to keep on hand to treat every resident within 10 miles of a nuclear reactor. About 22 states have requested or received some of those doses, and localities periodically offer free supplies for nearby residents to store themselves.

But radiation health specialists debate whether a 10-mile radius is big enough — and whether people should store their own. Some are pushing the Obama administration to reconsider. Obama health officials wouldn't comment Tuesday.



"My feeling is I would have every household within of a plant have it in their medicine cabinet," said Redlener, adding that the Japan crisis illustrates the difficulty of getting pills from a central warehouse to panicked people during an emergency.

Even on the East Coast, some health departments reported increased interest from power-plant neighbors Tuesday: A Pennsylvania hotline that normally gets five to 10 calls a week about storing the pills has fielded 85 such inquiries in the past two days.

## **Japan's Nuclear Crisis Prompts U. S. Run On Iodine Pills Despite No Threat (MCT)**

By Rob Hotakainen And Renee Schoof, McClatchy Newspapers

[McClatchy](#), March 16, 2011

WASHINGTON — Major suppliers of pills that provide protection from radiation say they're out of stock due to panic buying, even though experts say that the Japanese nuclear catastrophe poses no health threat to Americans.

It's a different story in Japan, where a failing nuclear plant spewed out more radiation on Tuesday, as the crisis concluded its fifth day. With thyroid cancer posing the most immediate health risk, Japanese officials made plans to distribute potassium iodide pills in an attempt to prevent it.

Troy Jones, president of [nukepills.com](#) in Mooresville N.C., said he has sold 6,500 orders of iodine pills in the last four days. In a normal four-day period, he said he'd sell only 100. He said most of the orders came from customers in Washington State, Oregon and California who want to protect themselves from Japanese radiation.

"Everybody thinks it's going to just land in their backyard in Malibu or something," Jones said.

On Capitol Hill, Democratic Rep. Ed Markey of Massachusetts called on the Obama administration to supply all US citizens living within 20 miles of a nuclear plant with emergency pills.

The World Health Organization said that taking iodine tablets could be an important action to reduce the risk of thyroid cancer from radiation exposure. But it said that the decision should only be made by national health authorities.

Most experts in atmospheric science say very little radiation could end up in the US

"Even though the winds are blowing radiation out into the Pacific, they're (thousands of) miles from the US," said Thomas Tenforde, president of the National Council on Radiation Protection and Measurements. "Plumes of radiation are going to get dispersed pretty widely. They're not just going to travel in a straight line to North America."

Dan Jaffe, a University of Washington Bothell atmospheric chemist who has studied pollution patterns crossing the Pacific from Asia for 20 years, said it's possible that radiation from a major meltdown of one or more nuclear reactors in Japan could reach the Puget Sound, 4,800 miles away. But he said there would be no health risk.

"I can't imagine a scenario where the radiation release would be big enough to be a health hazard," he said.

But some said that trying to measure radiation could get tricky.

David Lochbaum, a nuclear engineer who directs the Union of Concerned Scientists' nuclear safety program, said that contamination levels are not necessarily lower the farther away people are from the source. In the Chernobyl disaster, some places 100 miles away had more radiation than other points 10 to 15 miles away. The distribution depends on how winds carry it and where rains wash it down, he said.

Ed Lyman, a physicist with the Union of Concerned Scientists global security program and an expert on nuclear plant design, said that there were some reports that Japanese officials hadn't handed out potassium iodide pills immediately. If true, that would be a concern, because people need to take the pills several hours before they're exposed to the radiation, he said.

As for the United States, Lyman said "it's unlikely, even worst case, that there would be significant health effects for people."

"No amount of additional radiation is a good amount, but I would think that would not be significant or anything for the US to be concerned about," he said.

With the public jittery over nuclear fears, Energy Secretary Steven Chu went to the Capitol to tell a House subcommittee that Americans "should have full confidence that the United States has rigorous safety regulations in place to ensure that our nuclear power is generated safely and responsibly."

And while governments in Switzerland and Germany took steps to curtail their nuclear energy programs, Chu told the House Appropriations Subcommittee on Energy and Water Development that the US "must rely" on nuclear power and that the administration will continue to push \$36 billion in loan guarantees to help power companies build more plants.

Both the Nuclear Regulatory Commission (NRC) and the Department of Energy (DOE) said the US is stepping up its aid to Japan. Chu said the DOE has sent 34 people and 7,200 pounds of gear, including firefighting equipment and airborne equipment that will be used to monitor growing radiation levels caused by the partial meltdown of the Fukushima Daiichi nuclear complex.



"No expense should be spared (in helping Japan)," Pennsylvania Democratic Rep. Chaka Fattah told Chu, adding that the US should not be deterred in moving forward with its nuclear plans because of the explosions in the Japanese plant: "We need to make sure they're safe."

Washington Rep. Norm Dicks, the top-ranked Democrat on the House Appropriations Committee, asked whether nuclear plants in the United States could withstand very large earthquakes. He told Chu that his home state has "the potential for a 9" on the Richter Scale.

Chu said that the government insists that all plants be assessed for their "maximum geological risk" and that they be designed at a level above that.

At nukerolls.com, Jones no longer was selling pills but was advising customers to buy liquid iodine, which he said has the same effect. A bottle, which has enough iodine to protect one adult for 15 days, sells for \$24.99, while a 14-packet of pills goes for \$10.

Jones, who started the business in 1999 when he moved near a nuclear plant in Charlotte, said his phone was ringing every 10 seconds. And he said he understood what was prompting the demand from customers.

"To them, it's cheap insurance, it's FDA approved, it's proven science," he said. "We know how it works, we know why it works, we know it does work. ... We are so slammed with orders. It's the busiest I've seen it in 12 years."

Jones was excited when he ordered another 5,000 bottles on Tuesday and was told that he'd get it by Friday.

But like other health officials, he said he knew his product wasn't needed by his West Coast customers for the Japanese explosions.

"I think it's unnecessary," he said. "It's necessary for people to stockpile potassium iodine on a normal everyday basis have it in your emergency kit, but I do not believe it will be needed on the West Coast for the events that are happening in Japan."

(Mike Archbold of The Tacoma News Tribune contributed to this article.)

## **NUCLEAR CRISIS: Radiation Fears Spur US Sales Of Potassium Iodide Pills (GWIRE)**

By Hannah Northey

[Greenwire](#), March 16, 2011

US manufacturers of potassium iodide pills are reporting "overwhelming demand" and some temporary shortages, even though federal regulators say radiation from Japan's crippled Fukushima Daiichi nuclear plant is not expected to reach America.

Virginia-based Anbex Inc. reported yesterday it was out of potassium iodide pills until mid-April. A common form of salt, the compound is one of three FDA-approved drugs that block human and animal thyroid glands from absorbing excessive amounts of radiation. The US-based arm of Swedish company Recipharm AB, which produces the potassium iodide ThyroSafe tablets, also is reporting "overwhelming need" and has temporarily shut down its online sales orders.

The Nuclear Regulatory Commission, which works with the Energy Department and other agencies to monitor radioactive releases and predict their path, said on Sunday that "all the available information" indicates small releases from the Fukushima reactors were being blown out to sea. Given the distance between Japan and Hawaii, Alaska, the US territories and the West Coast, NRC said those regions were not expected to experience any harmful levels of radioactivity.

The International Atomic Energy Agency (IAEA) said Fukushima Daiichi's Unit 2 experienced an explosion yesterday that may have damaged the containment vessel, on the heels of explosions at Units 1 and 3. The agency also reported a fire at Unit 4.

The Japanese government is evacuating residents within a 20-kilometer zone around the plant, and advising people within 30 kilometers to take shelter indoors. The government also is distributing iodine tablets, according to the IAEA, and a 30-kilometer no-fly zone has been established around the plant.

The NRC is ramping up its own efforts, saying yesterday it was sending more of its officials to Japan to help the Fukushima Daiichi plant operators cool the reactors, as well as offering shelter, potassium iodide, staffing and equipment for victims of the earthquake and tsunami.

Meanwhile, attention in the United States has turned to increased scrutiny of the country's nuclear fleet and how to protect Americans in the event of such a crisis, including the purchase and distribution of potassium iodide.

California health officials issued a statement on their website informing the public that taking potassium iodide pills is not recommended at this time, since the NRC said Japan's nuclear crisis presents no danger to the state.

But Rep. Edward Markey (D-Mass.) is once again pushing the federal government to distribute potassium iodide to people within a 20-mile radius of a nuclear power plant.

The NRC currently requires states with populations within the 10-mile emergency planning zone of a commercial nuclear reactor to consider dispensing potassium iodide as a protective measure along with evacuations and shelter provisions.



Markey says members of the Obama administration have rebuffed his requests, despite repeated letters.

#### Potassium iodide

The Food and Drug Administration (FDA) issued a final guidance on potassium iodide in 2001 to inform decisions by regulatory agencies, including the NRC and state and local governments, on the safety of the pills. That same year, the NRC implemented its 10-mile rule.

FDA found, based on studies following the 1986 nuclear meltdown in Chernobyl, that potassium iodide effectively blocks the thyroid from taking up radioiodine, and its use will "be effective in reducing the risk of thyroid cancer in individuals or populations at risk for inhalation or ingestion of radioiodines."

The FDA said short-term administration of the drug is safe, but could include side effects of salivary gland inflammation, gastrointestinal disturbances, allergic reactions and minor rashes. The agency also said people with iodine sensitivity should not take the drug.

The agency spelled out that the pills are effective for 24 hours at a time, and that risk of inhaled radioiodines at the "time of the emergency" depends on the magnitude of the release, wind direction and other atmospheric conditions, and "thus may affect people both near to and far from the accident site."

The pills do not guard against the body's uptake of other radioactive materials, the FDA said, provide no protection against "external irradiation of any kind" and should be used in conjunction with evacuation plans, shelters and control of foodstuffs.

The FDA is now directing the public to buy potassium iodide from a handful of companies, including Anbex, Recipharm, and Fleming & Co. Pharmaceuticals.

According to NRC documents, the shelf life for 130-milligram potassium iodide pills is seven years, and the 65-milligram tablets have a shelf life of six years.

Markey has raised concerns that the drug should be distributed to a larger number of inhabitants surrounding US nuclear facilities.

Markey sponsored legislation that became law in 2002 making potassium iodide (KI) available to state and local governments within a 20-mile radius of nuclear reactors.

But the George W. Bush and Obama administrations decided against implementing the law, Markey said, and are "denying communities access to stockpiles of" potassium iodide. Markey sent a letter yesterday to John Holdren, the president's director of the Office of Science and Technology Policy, asking the administration to implement the amended Public Health Security and Bioterrorism Preparedness and Response Act of 2002.

"Japan reportedly is now distributing KI to its citizens," Markey wrote. "We should not wait for a catastrophic accident at or a terrorist attack on a nuclear reactor in this country to occur to implement this common-sense emergency preparedness measure."

## **EPA Deploys More Radiation Monitors To The West Coast (MERCN)**

By Paul Rogers

[San Jose Mercury News](#), March 16, 2011

As public concern grows about radiation from Japan possibly drifting to the West Coast of the United States, the US Environmental Protection Agency on Tuesday announced that it will deploy more electronic monitors that measure radiation levels in the air.

The monitors, which detect gamma radiation and radioactive particles, will be set up in "parts of the Western US and US territories," the agency said in a statement.

EPA officials, however, refused to answer questions or make staff members available to explain the exact location and number of monitors, or the levels of radiation, if any, being recorded at existing monitors in California. Margot Perez-Sullivan, a spokeswoman at the EPA's regional headquarters in San Francisco, said the agency's written statement would stand on its own.

Critics said the public needs more information.

"It's disappointing," said Bill Magavern, director of Sierra Club California. "I have a strong suspicion that EPA is being silenced by those in the federal government who don't want anything to stand in the way of a nuclear power expansion in this country, heavily subsidized by taxpayer money."

The EPA has 124 air monitors, which provide hourly readings, already in place in its "Rad-Net" system to measure radiation, including 12 in California and two in Hawaii. One is in San Francisco, on the roof of the Bay Area Air Quality Management District. Others are in San Jose, Sacramento, Fresno, Los Angeles and San Diego.

The EPA also has 40 mobile monitors, some of which are now being deployed. The agency clarified that some would go to Guam, Hawaii and Alaska, but did not respond to questions about California.



"As the Nuclear Regulatory Commission has said, we do not expect to see radiation at harmful levels reaching the US from damaged Japanese nuclear power plants," the EPA statement said.

Experts on Monday told the Mercury News that high levels of radiation are unlikely to hit California because Japan is 5,000 miles away. However, studies from the California Air Resources Board have found that coal dust and other pollution from China regularly reaches the state.

Most experts said that if the Japanese reactors experience a complete Chernobyl-type explosion, fire and release of nuclear material, some could reach California, but probably in very low amounts.

Meanwhile, another branch of the Obama administration generated confusion Tuesday. During a Northern California visit, US Surgeon General Regina Benjamin was asked by a TV reporter whether California residents who are stocking up on potassium iodide are being extreme.

Potassium iodide blocks the thyroid from absorbing radioactive material. It is often used by people who are exposed to radiation.

"It's a precaution," she said. "You mean stocking up here? I haven't heard that. But it's a precaution, yeah."

Benjamin toured Mills-Peninsula Medical Center in Burlingame and San Mateo Medical Center to discuss trends in electronic medical records and minority health.

State and county health officials in California have told residents not to take potassium iodide because the Nuclear Regulatory Commission has said that US residents are not at risk from the disaster, and some people are allergic to the medicine.

After the surgeon general's remarks were highlighted by the Drudge Report, a website that receives 36 million hits a day, with the headline "Surgeon General: Get Iodide," the Mercury News asked for clarification.

"She commented that it is always important to be prepared; however, she wouldn't recommend that anyone go out and purchase it for themselves at this time," said Dori Salcido, a spokeswoman for Benjamin.

Cities across the West reported runs on potassium iodide at stores. Some websites selling Geiger counters also said they had sold out.

"I called six stores today in Santa Clara County," said Charlie Bullock of Los Gatos. "You can't find it anywhere. Hopefully, if any radiation gets over the ocean, it will disperse. But if it doesn't, I'm afraid people in California will be caught off-guard."

Contact Paul Rogers at 408-920-5045.

## **So Far, Very Low Risk Of West Coast Contamination From Japanese Nuclear Accident, Experts Say (MERCN)**

By Paul Rogers

[San Jose Mercury News](#), March 16, 2011

As emergency workers struggled to prevent a full-scale meltdown at a Japanese nuclear plant, public health experts said Monday that there is little risk that radioactive material could reach California and the West Coast – unless the disaster gets a lot worse.

And even then, the public health threat probably remains very small.

"Based on the type of reactor design and the nature of the accident, we see a very low likelihood -- really a very low probability -- that there's any possibility of harmful radiation levels in the United States, or in Hawaii or in any other US territories," Greg Jaczko, chairman of the Nuclear Regulatory Commission, said at Monday's White House media briefing.

That didn't stop some worried California residents from rushing to buy potassium iodide, which blocks the uptake of radioactive material to thyroid glands.

Meanwhile, state health officials said Monday that they haven't checked radiation monitors around the state for any rise in levels.

"We're not being told there's any reason to check the monitors," said Michael Sicilia, spokesman for California Department of Public Health. "We generally pull them once a month. If we're told by the feds we need to test them, we'll test them."

Northern Japan, where a 9.0 earthquake and tsunami crippled the cooling systems at three reactors at the Fukushima Daiichi Nuclear Power Station, is about 5,000 miles from the West Coast of the United States. The amount of material released so far -- mostly radioactive steam -- has not been in large enough quantities to pour into the upper atmosphere and blow across the Pacific Ocean, experts said Monday.

"Based on what has happened to date, there is essentially zero risk," said Jerrold Bushberg, director of health physics programs at UC Davis.



"No appreciable amount of radioactive material will reach Hawaii or the West Coast," said Bushberg, who specializes in radiological emergency preparedness. "Anything there would be so diluted, from rains over the Pacific Ocean, it would precipitate into the ocean. It wouldn't be anything I would be concerned about."

Nevertheless, if conditions are right, recent research has shown tiny particles can – and regularly do – drift from Asia to the United States.

Dust from sandstorms in China's Gobi Desert has been found in California. So has mercury burned in coal in Chinese power plants, as particles drifted across the ocean, raining down in small amounts into San Francisco Bay.

It can take six to 15 days for such particles to reach the United States, said Tony VanCuren, an atmospheric scientist with the California Air Resources Board who has studied the issue since 2001.

"We see it in the Rocky Mountains, in Alaska; it's very widespread," he said. "We've actually seen evidence of Asian dust in the Virgin Islands."

News of the growing crisis in Japan has sparked some Bay Area residents to head to pharmacies to buy potassium iodide tablets.

Santa Clara County's public health officer, Dr. Martin Fenstersheib, said he does not recommend that precaution. Some people are allergic to iodine and have severe reactions, he said.

"There is no reason for doing it," he said. "I understand that people are afraid of the unknown. Even with earthquakes, we're used to them. It's a scary thing when people say 'nuclear contamination.' It's something you can't see, and because you can't see it, people are afraid. It's a normal human reaction. But there's no risk at this point."

In the 1986 Chernobyl disaster, radioactive material from a raging fire spread across much of Europe and was detected on the clothing of Swedish workers, which first alerted the world to the disaster that Soviet authorities tried to keep quiet.

That calamity, the world's worst nuclear disaster, resulted in the deaths of 32 workers who tried to put out the fire at the Ukrainian plant. A 20-year study released last year by the U.N. Scientific Committee on the Effects of Atomic Radiation found that there were about 6,000 cases of thyroid cancer in children from Ukraine and Belarus who drank milk with elevated levels of radioactive iodine from cows in the area. Treated correctly, thyroid cancer has a survival rate above 90 percent.

Radiation levels were not high enough to harm others in the former Soviet Union and Europe who lived in the area where the cesium-137, iodine-131 and other radioactive materials drifted for hundreds of miles, the study found.

"There is no scientific evidence of increases in overall cancer incidence or mortality rates," the study concluded.

If a full-scale meltdown occurs in Japan, with a massive fire and explosion, and loss of containment, as happened at Chernobyl, that could send large amounts of radioactive material into the air, drifting above 5,000 feet, where weather patterns could bring it to the United States. Even then, the material would be spread out very widely.

"For the moment, as long as they can keep the reactors cool, what they have is a local problem," VanCuren said. "If it becomes a catastrophic problem, the impact in North America will not be zero. but it will be small. For now, the risk to us far downwind is small."

Contact Paul Rogers at 408-920-5045.

## **NUCLEAR CRISIS: Could Calif. Reactors Be Next? (GWIRE)**

By Colin Sullivan

[Greenwire](#), March 16, 2011

SAN FRANCISCO – California's coast and its nuclear power plants are unlikely to experience the kind of massive offshore earthquake or sustained tsunami that rocked Japan last week, but more local tsunamis from submarine landslides are possible, according to experts who study West Coast tectonics.

The two nuclear plants on the California coast operate near population centers near the Pacific Ocean. Pacific Gas and Electric Co.'s Diablo Canyon facility is close to San Luis Obispo, and Southern California Edison Co.'s San Onofre plant is just south of Los Angeles.

The generating stations, in operation since the mid-1980s, are built to withstand earthquakes of 7.0-7.5 magnitude, and both have tsunami walls that are 25 to 30 feet tall. But the plants are more threatened by onshore faults than offshore, with Diablo Canyon especially vulnerable given its proximity to the San Andreas Fault.

Costas Synolakis, director of the Tsunami Research Center at the University of Southern California, said the offshore earthquake zone close to either plant is not capable of producing the 8.9 magnitude quake that devastated Northeast Japan last week. Regions farther north, from the California line to British Columbia, are in much greater danger for that sort of event, he said.



Those areas are near what is called the Cascadia Subduction Zone, which is capable of producing the kind of tsunami that inundated Japan and leveled everything in its path. The zone last ruptured around 1700, so, in theory, a big quake is possible anytime.

"The Cascadia Subduction Zone ... is the only offshore earthquake zone [on the West Coast] capable of producing megathrust events, i.e., very large 'top 10' type earthquakes," said Synolakis, adding that Seattle is in far more danger than any spot south of the California-Oregon line for that kind of quake plus tsunami.

"The impact to Seattle could be devastating," he said.

The Cascadia zone is capable of a 9.2 quake, which "could happen any time," Synolakis said. Offshore faults close to either nuclear power installation in California are not likely to top 7.5.

Even so, threats from the Earth's volatile geology in Southern California are plentiful.

Onshore earthquakes are always a danger, and there is a chance submarine avalanches (also called landslides) triggered by quakes could produce local tsunami events that wash into either of the two California plants, both of which will soon have to be relicensed if they are to continue pumping out electricity.

Synolakis said submarine landslides "can generate a fairly large tsunami," though this sort of wave would not travel across the ocean. Such events are not usually considered during safety proceedings because they are so rare.

"These things can be fairly devastating, locally," said Synolakis, estimating that the maximum run-up onshore would be about 45 feet in the southern part of the state.

'The real Earth is not perfect'

Mark Legg, an offshore fault expert and geophysicist with Legg Geophysical in Huntington Beach, Calif., agreed that the Cascadia zone is the real threat for a coastal quake/tsunami event that might rival Japan's.

The last time something of that magnitude occurred off the California coast was more than 30 million years ago, Legg said, explaining that the North American plate is no longer "being shoved" (or subducted) under the continental margin offshore, as a plate was in Japan last week.

Legg noted that the largest local tsunami off California was caused by a quake in 1927 in Point Arguello, which produced waves of about 7 feet. But he was also hesitant to rule anything out, because even offshore quakes that would tend to move more horizontally – as they would off the California coast – can "slip sideways" and produce walls of water.

"The real Earth is not perfect," said Legg, explaining that California has a number of spots called transverses, one right off the coast of Santa Barbara, that could result in tsunamis if the sea floor ruptures at the right angle.

"Those are areas that could see tsunamis generated even in a strike-slip system," he said. "This is a problem which is still being sorted out in the scientific community."

Legg noted that the Bay Area's Loma Prieta quake, in 1989, whose epicenter was in the Santa Cruz Mountains south of San Francisco, led to a tsunami caused by the uplift of the thrust movement so close to the ocean. The area of the uplift extended offshore, creating a tsunami.

"It wasn't very big, so it didn't do much damage," Legg said. "But if the landslide were bigger, it could be a lot worse."

A "very large submarine landslide" documented from about 7,500 years ago created coastal waves in the 20- to 50-foot range, Legg said, calling an event of that magnitude a "worst-case" scenario.

It is those kinds of scenarios that have led some academics to question where we build nuclear capacity. Chris Goldfinger, director of the Active Tectonics and Seafloor Mapping Laboratory at Oregon State University, said the recent events in Japan could signal a need to revisit whether any society should build such plants next to fault zones.

"Building critical facilities on active faults is an inherently dangerous practice and should only be done when all scenarios are very well accounted for, as they were not in Japan, even though the Japanese take great care with safety issues," Goldfinger said.

Diablo Canyon relicensing

For PG&E, the Japan quake comes just as the Nuclear Regulatory Commission is reviewing its application to relicense the 2,240-megawatt plant, to keep it operational through 2045. Edison is also expected to file for a new license, for San Onofre, which is about 2,200 megawatts in size.

The question of new seismic studies for both appears likely to dog the entire relicensing process, which tends to take about four years to complete. PG&E has already found itself in the crosshairs for claiming, in testimony submitted to the California Energy Commission in October 2008, that "there is no uncertainty regarding the seismic setting and hazard at the Diablo Canyon site."



A letter sent last month from 10 California lawmakers to the Blue Ribbon Commission on America's Nuclear Future noted that weeks later, in November 2008, the US Geological Survey discovered a new offshore fault close the plant, making it the second active fault in the area.

"An intersection of the faults could significantly alter previously held assumptions about potential seismic activity and threat to Diablo Canyon," the lawmakers wrote, asking for a hearing before the Blue Ribbon Commission.

The utility is also trying to recover funds from ratepayers for the relicensing to the tune of \$85 million. That process is under way at the California Public Utilities Commission. PG&E did not return calls seeking comment.

### **Napolitano: US Drills For Disasters Like Japan's (NYT/AP)**

[New York Times/Associated Press](#), March 15, 2011

DENVER (AP) – US emergency agencies constantly rehearse for a disaster like the one unfolding in Japan, and American first responders will learn from the experience of their Japanese counterparts, Homeland Security Secretary Janet Napolitano said Tuesday.

Napolitano, speaking at a conference in Denver, said the United States was already planning a drill based on a hypothetical major earthquake along the New Madrid fault in the central US when the earthquake, tsunami and nuclear-reactor crisis struck Japan.

"We are constantly practicing, using scenarios that are worst-case scenarios, to make sure we are as prepared and as up-to-date and as ready to go as we can be in any kind of a crisis," she said.

The drill, scheduled for May, coincides with the bicentennial of a series of three quakes on the New Madrid fault in 1811-1812, which were estimated to have ranged from 7.5 to 7.7 magnitude – some of the largest ever in the United States. The US Geological Survey says there is a 7 to 10 percent chance of a similar quake occurring in that area in the next 50 years.

The New Madrid fault system is 150 miles long and touches five states: Illinois, Missouri, Arkansas, Kentucky, Tennessee.

Napolitano said her department works with the Nuclear Regulatory Commission to practice responding to a crisis at a nuclear reactor.

"We think about how we would manage a crisis where you lose all your communications capability, all your critical infrastructure, there's no electricity, you can't even pump water for people to drink," she said.

Napolitano said it's too early to say whether US practices or preparations will change because of the disasters in Japan. But she said the US will learn from Japan's experience, as it did from Hurricane Katrina in 2005 and the oil spill in the Gulf of Mexico last year.

The US is focusing now on providing whatever assistance the Japanese government asks for, Napolitano said. She said the NRC and the Energy Department have told her Japan is responding to the nuclear crisis the way US agencies would.

She also cited NRC assurances that any fallout from the Japanese reactors would not put the US at risk.

Napolitano spoke at a conference on the US network of "fusion centers," which gather and share federal, state and local intelligence on terrorism and other threats.

She said terrorist plots by US residents or citizens are increasing, and the centers are a key part of the US counter-terrorism strategy. There are about 70 fusion centers nationwide.

Napolitano said the Colorado fusion center, called the Colorado Intelligence and Analysis Center, played a "significant role" in the arrest of Najibullah Zazi, a former Denver airport shuttle driver who pleaded guilty to plotting to detonate explosives in New York City around the anniversary of the Sept. 11, 2001, attacks.

### **Napolitano Says US Will Learn From Japan's Disaster (DENP)**

By Felisa Cardona

[Denver Post](#), March 16, 2011

Full-text stories from this source currently cannot be included in this document. You may, however, click the link above to access the story.

### **Napolitano Says US Prepared For Japan Type Disaster (FOX)**

By Kelly Burke

[FOX News \(blog\)](#), March 15, 2011

Secretary of the Department of Homeland Security Janet Napolitano says the US is constantly preparing to respond to disasters like the one in Japan. She says an annually held, major disaster preparedness exercise is already scheduled to be held May 16 to 20. This year's event will be held in the New Madrid earthquake zone which runs through several states along the Mississippi River in the center of the country.



According to the DHS website, "The purpose...is to prepare and coordinate a multiple-jurisdictional integrated response to a national catastrophic event. NLE 2011 will involve thousands of government officials at the federal, state, local and tribal levels, members of the private sector, and the general public. Participants will conduct simultaneous, related exercise activities at command posts, emergency operation centers and other locations in the Washington D.C. area and the eight affected central US states (Alabama, Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee)."

Napolitano mentioned the exercise in response to reporter's questions after her speech at the National Fusion Center Conference. The Secretary said the first priority of the department and other federal agencies is to assist Japan in responding to what she termed a triple disaster. "They've been hit by a record earthquake, they've been hit by a tsunami, they've been hit by a nuclear crisis."

She went on to say that the federal government, "is constantly practicing, using scenarios that are worst case scenarios to make sure that we are as prepared and up to date as we can be in any kind of crisis." Napolitano said a nuclear crisis is one of those the US works to prepare for. "We practice with the guidance and participation of the NRC (Nuclear Regulatory Commission) what would happen if something were to occur to one of the nuclear power plants in the United States."

While not a specific response to the crisis in Japan, the planned National Level Exercise in the New Madrid Seismic Zone is timely, as there are several nuclear power plants in the region.

Earlier, in a speech to homeland security advisors, law enforcement and intelligence officials, Secretary Napolitano announced the expansion of DHS' new "If You See Something, Say Something" public awareness campaign. "Ensuring our security is a shared responsibility that requires every individual to be alert and to recognize and report suspicious behavior."

The Secretary stressed the vital role played by fusion centers around the country which facilitate information sharing among federal, state, local and tribal law enforcement agencies. "Homeland security begins with hometown security, and our national network of fusion centers plays a critical role in improving our collective ability to protect our communities."

Napolitano stressed that the biggest challenge today comes from homegrown violent extremists who are residents or citizens of the United States. She mentioned that Colorado's fusion center played a crucial role in the arrest of terror suspect Najibula Zazi, who is accused of planning a terror attack in New York City.

## **Napolitano: Radiation From Japan's Nuclear Reactors Not A Threat To US (ABC)**

By Amy Bingham And Clayton Sandell

[ABC News \(blog\)](#), March 15, 2011

With Japan's nuclear radiation situation worsening, officials in the United States are taking a sharper look at the safety, and faults, of America's nuclear facilities. Homeland Security Secretary Janet Napolitano said the nuclear failures in Japan will "undoubtedly" expedite disaster planning at US nuclear plants.

"We constantly think about, prepare, exercise, work with our states, our localities, our utilities and the private sector on thinking about what would occur and exercise to the point of failure," Napolitano told ABC News Tuesday after a conference in Denver.

Napolitano sought to quiet fears of radiation drifting from Japan to California shores.

"The level of radiation coming out of Japan does not put the United States at risk," she said.

Japanese Prime Minister Naoto Kan urged people living 12 to 19 miles around the plant to stay indoors Tuesday after fears that a containment vessel at Japan's Fukushima Daiichi nuclear power plant was leaking radiation. Concerns that the radiation would spread across the Pacific to the United States sparked a mad dash in California for potassium iodide, which protects the thyroid from radiation poisoning.

There are 15 American nuclear power plants that are the same or similar design as the site in Japan where explosions near three reactors have the country on high alert for nuclear radiation. The US plants are located along the New Madrid fault line which runs through eight states - Illinois, Indiana, Missouri, Arkansas, Kentucky, Tennessee and Mississippi - and could affect more than 15 million people.

"As we look at something like the upcoming New Madrid fault exercise, we will be stressing our systems and looking to what they can withstand and where we need to continue to improve," Napolitano said.

"Just as we have learned as a nation from Katrina, on response when there's a major incident, just as we have learned from the BP oil spill this last year, I'm sure in the, sure in the aftermath when all is said and done we'll learn something from the tragedy occurring in Japan," Napolitano said.

## **Napolitano In Denver: US Drills For Disasters Like Japan's (KMGH)**

[KMGH-TV Denver](#), March 15, 2011



DENVER --

US emergency agencies constantly rehearse for a disaster like the one unfolding in Japan, and American first responders will learn from the experience of their Japanese counterparts, Homeland Security Secretary Janet Napolitano said Tuesday.

Napolitano, speaking at a conference in Denver, said the United States was already planning a drill based on a hypothetical major earthquake along the New Madrid fault in the central US when the earthquake, tsunami and nuclear-reactor crisis struck Japan.

"We are constantly practicing, using scenarios that are worst-case scenarios, to make sure we are as prepared and as up-to-date and as ready to go as we can be in any kind of a crisis," she said.

The drill, scheduled for May, coincides with the bicentennial of a series of three quakes on the New Madrid fault in 1811-1812, which were estimated to have ranged from 7.5 to 7.7 magnitude -- some of the largest ever in the United States. The US Geological Survey says there is a 7 to 10 percent chance of a similar quake occurring in that area in the next 50 years.

The New Madrid fault system is 150 miles long and touches five states: Illinois, Missouri, Arkansas, Kentucky, Tennessee.

Napolitano said her department works with the Nuclear Regulatory Commission to practice responding to a crisis at a nuclear reactor.

"We think about how we would manage a crisis where you lose all your communications capability, all your critical infrastructure, there's no electricity, you can't even pump water for people to drink," she said.

Napolitano said it's too early to say whether US practices or preparations will change because of the disasters in Japan. But she said the US will learn from Japan's experience, as it did from Hurricane Katrina in 2005 and the oil spill in the Gulf of Mexico last year.

The US is focusing now on providing whatever assistance the Japanese government asks for, Napolitano said. She said the NRC and the Energy Department have told her Japan is responding to the nuclear crisis the way US agencies would.

She also cited NRC assurances that any fallout from the Japanese reactors would not put the US at risk.

Napolitano spoke at a conference on the US network of "fusion centers," which gather and share federal, state and local intelligence on terrorism and other threats.

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## **Nuclear Regulatory Commission Puts Temporary Hold On Vermont Yankee License (BOS)**

By Beth Daley

[Boston Globe](#), March 16, 2011

The Nuclear Regulatory Commission yesterday put a temporary hold on a 20-year license extension for the controversial Vermont Yankee nuclear power plant. The commission had instructed its staff to issue the renewal last Thursday, the day before the massive earthquake and tsunami in Japan.

Spokesman Neil Sheehan attributed the delay to the fact that manpower is short while the agency focuses resources on helping Japan deal with the unfolding nuclear crisis triggered by the natural disaster.

But opponents of the nearly 40-year-old plant, who note it is the same design as the most compromised reactor in Japan, said the delay should be far longer -- until the agency can assure the public the plant is safe.

Vermont Yankee, in Vernon near the Massachusetts border, has suffered a series of problems in recent years that have frayed the public trust, including the collapse of a cooling tower and leaks of tritium from underground pipes that company officials initially said were not there.

"I think it is prudent to take a step back and say this reactor design is having serious problems in Japan," said James Moore, clean energy program director for the Vermont Public Interest Research Group. "The last thing we should do is say it is good to go for another 20 years past its expiration date."

Germany has shut down seven aging plants until they can be assessed for safety in the wake of the Japanese crisis. In Russia, Prime Minister Vladimir Putin ordered a review at Russian nuclear facilities. India's plants are also undergoing a review.

The Obama administration, however, has not ordered any similar review and has continued to back nuclear power through the crisis, saying it would learn lessons from Japan's nuclear problems. President Obama has embraced nuclear power, requesting \$36 billion for government-backed loans to help the nuclear industry build additional plants in his budget proposal.

While the delay has given some hope to opponents of the Yankee plant, it is unclear whether there is any possibility, legally, of the commission actually reversing the decision it made last week, when it allowed staff to issue the license.



Yesterday, Vermont Yankee spokesman Larry Smith said it was his understanding the delay was merely a temporary one and the license would be issued soon.

The timing of the Japanese crisis couldn't be worse for the nuclear industry, as it attempts a broad rebirth as a green energy source to combat global warming; the reactors do not emit greenhouse gases that cause the atmosphere to warm.

Vermont Yankee provides roughly one-third of the Green Mountain State's electricity, and for the most part inexpensively. That low cost - and the jobs it provides - has won it some support in the state. Still, antinuclear sentiment, always an undercurrent in this liberal state, gained a new foothold in 2006 after the plant received NRC permission to increase its power output by 20 percent.

## **Vermont Yankee License Renewal Delayed, But Coming (BOS)**

[Boston Globe](#), March 16, 2011

Nuclear Regulatory Commission officials say Vermont Yankee's license renewal is still coming, but will be delayed because agency workers are busy with events in Japan.

The federal commission's chairman, Gregory Jaczko (YAZ-ko), last week said the Vermont nuclear plant had satisfied his agency that it was fit to operate for 20 years past the expiration date of its original license next March.

The paperwork was expected to be in the Vermont Yankee's hands this week.

But with the NRC deploying staff members to help with the nuclear emergency in Japan, the NRC now is going to take a bit more time to finish the paperwork.

## **End Game For Vermont Yankee (BENNBANN)**

By John McClaughry

[Bennington \(VT\) Banner](#), March 16, 2011

Three months from now, Entergy Nuclear Vermont Yankee will be forced to make a fateful decision: whether to give in to the furious anti-nuclear campaign led for years by Vermont's anti-nuclear new governor, and abandon a safe, reliable, low-cost, nuclear plant that generates about a third of Vermont's electrical consumption.

Yankee's federal operating license expires in March 2012. In 2006 the company applied to the Nuclear Regulatory Commission for a 20-year license extension. Slowed to a crawl by the torrent of regulatory interventions by anti-nuclear groups, the NRC has yet to release its recommendations for extension. But based on its approval of extensions for dozens of similar plants, there is little doubt but what it will give Yankee a green light.

Anticipating that, the 2006 Legislature passed a law unique among the 50 states. It declared that the Public Service Board cannot take any final action to authorize continued operation of nuclear plant without an affirmative vote of both houses of the Legislature.

It is now clear that the legislative leadership -- Speaker Shap Smith and Senate President pro tem John Campbell -- have absolutely no intention of allowing a resolution of approval to come to a vote. That resolution would likely be voted down, but not allowing anyone to vote on it will shield the anti-nuclear legislators from having to answer to their voters for the likely consequences of a shutdown.

Those consequences are potentially grave. Yankee produces 620 megawatts of baseload power. It's currently the lowest cost 24/7 power purchased by Vermont utilities. IBM, with its \$35 million annual electricity bill, is deeply concerned that without Yankee, its power costs will rise by as much as 30 percent. That concern is shared by other manufacturers, hospitals, colleges, local governments, and ski areas.

Opponents argue that Yankee's capacity is only 2 percent of the total New England power grid, and will scarcely be missed. What they don't want to discuss is that the loss of regional generation requires finding replacement power from distant sources. That creates grid stability problems and possibly construction of expensive new transmission lines to move the power into the region.

The anti-nuclear activists' pipe dream of wind turbines and solar PV notwithstanding, the replacement power will largely come from coal- and gas-fired plants -- just the kind of plants that enviros staunchly oppose because they release the carbon dioxide that they believe leads to the dreaded "climate change."

Suppose the Legislature sneaks out of Montpelier in May without voting to allow Yankee to seek PSB approval for its continued operation. Then what?

Yankee operates with an 18-month fuel cycle. After 18 months online, the plant is shut down, the reactor head pulled, the spent fuel moved to a cooling pool, a new fuel load put in, the head put back on, and the plant starts a new power run. The next scheduled refueling falls in or around November.



When a refueling shutdown takes place, a new fuel load must be on site. The lead time for purchasing fuel assemblies is about five months. So Yankee will have to place its order in June.

But by the time the refueling is completed, the plant would have only three months to live. What company is going to spend millions of dollars on 18 months' worth of new fuel, when thanks to anti-nuclear politicians the plant would have only three months of operation left? Unless the Legislature turns around on this issue by May, and the PSB (as widely expected) issues a Certificate of Public Good by June, Entergy is almost certainly going to have to abandon Yankee.

The only uncertainty has to do with a possible Entergy appeal to federal courts to invalidate the 2006 statute. It's not clear just what legal argument Entergy might advance to get Federal courts to overturn the 2006 statute, but the litigation might well continue long enough for Yankee, with a stay of execution, to run through another fuel cycle to mid-2013.

If Yankee is forced to shut down next March, the New England grid operators may find some way to replace Yankee power, though at a significantly higher price. Perhaps more seriously, what business would be willing to locate or expand in a state where a Legislature, answering to the demands of anti-nuclear activists, insisted on shutting down a safe, reliable, low cost source of electricity, vital to the state's economic future?

## **Japan Earthquake Forces Questions Over Vermont Yankee's Future (STC COLUMN)**

[State Column](#), March 16, 2011

A battle is on for the re-licensing of Vermont Yankee Nuclear plant just as the earthquake in Japan is raising questions over the risks associated with nuclear power.

The Nuclear Regulatory Commission approved the plant's re-licensing for another 20 years, but the Vermont legislature voted to not allow the plant to operate once its current license expires in March of 2012. It now seems the debate over the plant's future is increasingly in doubt.

Vermont state law says the Legislature has to approve the plant before regulators can give the plant a new state license. The increasingly dire situation in Japan has prompted politicians worldwide to reconsider the risks associated with nuclear power.

The plant has the same reactor as the Fukushima nuclear plant in Japan, which saw its fourth explosion on Monday as power plant officials continued to work on cooling the reactor.

## **Vermont Yankee, Fukushima Nuclear Plants Are Of The Same Design (KEENE)**

By Kyle Jarvis And Dave Eisenstadter

[The Keene Sentinel](#), March 16, 2011

The reactor at the Vermont Yankee nuclear power plant is the same design as those damaged by the earthquake and tsunami in Japan, but officials at the Vernon, Vt., plant say that's where the similarities end.

Spent fuel rods containing radioactive material at the Fukushima Dai-ichi plant were damaged by fire, causing spikes in radiation levels, but levels have since dropped, according to the latest reports from the CNN News Service (see related story on this page).

The Vermont Yankee plant, which has a General Electric Mark 1 boiling water reactor, would safely shut down at or above a 6.2 magnitude earthquake, and the cooling systems would kick in, said spokesman Larry M. Smith. The plant could continue to operate normally up to a 5.5 magnitude quake, he said.

"We'd do a walk down, checking for any damage to any part of the structure," he said of the procedure after a quake. "We do that even when we sense there's been minor seismic activity."

Vermont Yankee declared an "unusual event" last June following a 5.0 earthquake in Canada felt in the Monadnock Region. The plant continued to operate normally and no structural damage was found.

In Japan's case, it appears the safety systems at the Fukushima plant all functioned properly following the earthquake, but couldn't survive the devastating tsunami that followed.

The Vernon plant has some natural protection, Smith said.

"The primary containment, which is the reactor vessel itself and the building that houses it, was built in bedrock," he said. "So it's seismic-proof. ..."

"It's not likely we're going to have an earthquake of that magnitude or a tsunami" as Japan had, Smith said.

Arnie Gundersen, a nuclear engineer who is a consultant for the Vermont Legislature on nuclear issues and served on the state's nuclear public oversight panel, told the Rutland Herald the spent fuel pool in the Mark 1 design is high up in the reactor building, which affects its center of gravity, creating a weakness to earthquakes from a design point of view.

The largest earthquakes ever recorded in New Hampshire occurred four days apart in December 1940, each measuring 5.5 on the Richter scale, according to the US Geological Survey website.



Those quakes happened near Ossipee Lake.

It's difficult to say how far-reaching the effects of a compromised reactor at the Vermont Yankee plant could be, said Dr. Jose Montero, public health director for the N.H. Department of Health.

"There are so many different variables that come into play, like weather conditions," he said. "We conduct exercises in New Hampshire, Vermont and Massachusetts four times a year," which includes evacuation plans coordinated by the Department of Homeland Security.

Radiation causes health problems by breaking chemical bonds in living tissue, according to the US Environmental Protection Agency. The body attempts to repair this damage, but sometimes it can't be repaired or is too widespread to be fixed.

The amount and duration of radiation exposure affects the severity or type of health effect. The two major types of radiation exposure are acute — meaning a short-term, high level exposure — and chronic — meaning a long-term, low-level exposure.

In cases of acute exposure, people often experience the effects quickly, which include burns, nausea, weakness, hair loss or diminished organ function. The dose can be fatal.

Most experts consider cancer the primary health effect from chronic exposure, according to the EPA.

James J. Connell, an associate physics professor at the University of New Hampshire, teaches a course called "Myths and Misconceptions About Nuclear Science," and has been following events in Japan closely.

Reports of radiation levels released by the Japanese reactors vary widely, he said. The most severe he has heard equals the same amount of radiation a person normally experiences in a year, according to Connell.

In the Chernobyl disaster in 1986, 50 people suffered acute radiation sickness, and all of them were inside the plant, according to Connell. He does not expect acute levels of radiation to spread outside of the established evacuation zone.

It is uncertain how events in Japan will affect the US view of nuclear energy, which had enjoyed a resurgence of national political support, Connell said.

"I think it's going to depend a lot on how things play out in Japan in the long run. It's still a very fluid situation."

## **Nuclear Expert: US Should Review Worst Case Scenarios (REU)**

By John Dillon

[Reuters](#), March 16, 2011

Full-text stories from Reuters currently cannot be included in this document. You may, however, click the link above to access the story.

## **SENTINEL EDITORIAL: There Is A Lesson For Americans In The Japanese Nuclear Crisis (KEENE)**

[The Keene Sentinel](#), March 16, 2011

The Nuclear Regulatory Commission's announcement that it has approved a 20-year license extension for the Vermont Yankee power plant came last week, one year before the plant's current license expires. And in a frightful irony, the announcement came just as the earthquake- tsunami disaster in Japan began to undermine and destroy nuclear plants there.

"This is the final step in the NRC's detailed technical and legal process of examining whether it's appropriate to issue a renewed license," explained NRC Chairman Gregory Jaczko in a press release. "Since there are other approval processes outside the NRC, we'll continue to ensure Vermont Yankee is meeting the appropriate public health and safety standards regardless of the reactor's ultimate status."

That was an awkward statement. Surely Jaczko doesn't mean that the NRC wouldn't bother itself with the plant's standards if it now faced no license-approval hurdles. Almost 40 years worth of used nuclear waste has accumulated there in Vernon, Vermont, waste that has to be isolated from the environment for tens of thousands of years, a time span longer than recorded human history.

It would be inappropriate, or at least premature, to draw safety parallels between Vermont Yankee and the troubled reactors in Japan. But it might be noted that Vermont Yankee is a General Electric boiling water nuclear plant, as is Fukushima Daiichi Unit I, the first of the plants in Japan to lose its cooling power and then explode. Vermont Yankee is almost the same advanced age as that plant, which received a license expansion last year. Now safety officials in Japan are distributing potassium iodide (KI) pills to protect the thyroid glands of people — especially children — who might be exposed to radiation leaks. People have discussed the wisdom of stockpiling those pills around here for years. The N.H. Department of Safety website lists addresses where people can order them.

While the Connecticut River Valley is highly unlikely to experience any catastrophe as great as the one that has hit Japan, unexpected things do happen at nuclear plants. And the margin of error is narrow. The most significant lesson from the Japan disaster for people around here may be how unforgiving the consequences of nuclear technology can be.



Evacuation zones for people who live near the Japanese plants have six-mile radiuses. But officials in Fukushima Prefecture are expanding them as reactors fail and radiation spreads. About 180,000 people have been removed from the region so far, unsure whether they will ever be able to return.

Vermont Yankee's emergency zone extends 10 miles from the plant and includes part or all of Hinsdale, Chesterfield, Richmond, Swanzey and Winchester in New Hampshire; Bernardston, Colrain, Gill, Leyden and Northfield in Massachusetts; and Brattleboro, Dummerston, Guilford and Vernon in Vermont. The emergency reception centers are Keene High School, Greenfield (Massachusetts) Community College and Bellows Falls Union High School.

Japan is trying desperately to deal with the dark underside of nuclear power. In this country, regulators have just renewed the 63rd consecutive license renewal request. They have yet to deny one.

But when NRC chief Jaczko said Vermont Yankee's renewal is subject to "other approval processes outside the NRC" he was referring to the fact that Vermont is the only state that gives its Legislature the authority to rule on a nuclear plant's renewal request. And last year the Vermont Senate voted 26 to 4 to reject the one from Vermont Yankee. Will Vermont's lawmakers stick to their principles?

Our hearts are with the Japanese in these troubled times. And our eyes are on Montpelier.

### **New Reactor Still On Track In Virginia (WP)**

By Peter Galuszka

[Washington Post](#), March 16, 2011

Despite Japan's nuclear disaster, Dominion Virginia Power intends to proceed with seeking a license for a third nuclear unit at its North Anna nuclear power station about 70 miles southwest of Washington.

The utility, which has two nuclear units at North Anna and two more in Surry County, hasn't decided if it would proceed with a third North Anna unit, but is getting its ducks in a row just in case.

Ironically, North Anna is in an area known for earthquakes, albeit not on the scale of one that has killed thousands in Japan. The Old Dominion has seen more than 160 earthquakes since 1977, but none greater than 5.8 in strength on the Richter scale, according to the Richmond Times-Dispatch.

One recent earthquake occurred on Dec. 9, 2003, and was recoded at 4.5 on the Richter scale. Its epicenter was three miles beneath the surface about 30 miles southwest of Richmond.

That area is roughly 40 miles from North Anna.

Peter Galuszka blogs at Bacon's Rebellion. The Local Blog Network is a group of bloggers from around the D.C. region who have agreed to make regular contributions to All Opinions Are Local.

### **McDonnell: 'Foolhardy' To Abandon Nuclear Power In Va. (WP)**

By Rosalind S. Helderman

[Washington Post](#), March 16, 2011

Virginia Gov. Bob Mc-Don-nell (R) said Tuesday that it would be "foolhardy" to abandon the construction of nuclear reactors in Virginia and elsewhere in the United States because of the unfolding nuclear crisis at earthquake and tsunami-damaged plants in Japan.

In an interview, Mc-Don-nell, a longtime supporter of nuclear power, characterized the problems in Japan as the result of "historic" and "cataclysmic" events. He said nuclear science has advanced to make such plants safe, and Virginia would not need to fear similar crises, in part because it is not earthquake-prone and its plants are far from the coast.

"These are cataclysmic events that I don't see affecting Virginia," Mc-Don-nell said. "I think it would be foolhardy to abandon the industry. ... We stand to benefit immensely from more nuclear development in this country. I think it's the right thing to do to prudently move forward with nuclear plant construction."

He said generation of electricity — from coal to oil and gas extraction to nuclear power — is "inherently dangerous." But he said science and government regulation has ensured that "everything humanly possible" is done to make nuclear power safe.

"I think that's the best you can expect out of an industry and that's the highest standard we should apply in the culture," he said. "But as long as there are uncertainties in nature and there is potential for human error, we're never going to make it 100 percent fail-safe."

Virginia has nuclear plants in Louisa and Surry counties. Dominion Virginia Power has applied to build a third reactor at one of its two plants at North Anna in Louisa; the company has confirmed it will proceed with its application despite the events in Japan.

"Overall in America, it's been one of the safest forms of electrical generation," he said.



## **Dominion Still Planning For Third Nuclear Reactor In Louisa (WWBT)**

By Tara Morgan

[WWBT-TV Richmond \(VA\)](#), March 15, 2011

LOUISA, VA (WWBT) - The threat of a nuclear meltdown in Japan is on the minds of those at Dominion Virginia Power, but it's still moving forward with plans for a third nuclear reactor in Louisa.

Dominion said it hasn't yet decided whether to build a third reactor at its North Anna Power Station, but wants the option there to meet customer demand. Meanwhile people who live near the nuclear power plant said they're not fearful, despite the disaster in Japan.

For twenty years, Shirley Jones has enjoyed the view from her back porch.

"There's no place I would rather live than right here," said Jones.

Her Tara Woods home isn't far from the North Anna Power Station which is home to two Dominion Virginia Power nuclear reactors. Dominion, which operates two more in Surry, is waiting for federal approval for a license to build and operate another reactor at North Anna.

"One thing I do think about, and I think that probably everybody that lives in an area around any of those nuclear plants think about, the property values and will this scare people," said Jones.

Like the rest of the world, Dominion is keeping close tabs on the nuclear scare in Japan to see what improvements can come of Friday's devastating quake and tsunami industry-wide. Dominion said it has a safe operating record at North Anna, and points out its reactors are designed differently from the ones in Japan.

North Anna has seen a few tremors, but isn't considered a high quake zone. A barrier made of concrete and steel protects the reactors. Dominion said they're built to withstand a worst case scenario earthquake.

"I have a whole lot of confidence in our technology nowadays," said Mr. Keene, who also lives on Lake Anna.

In Jones' mind, a third reactor wouldn't make much difference.

"If we're going to have an incident I figure whether there's one, two or three, it's something we'd have to face," said Jones.

A decision on whether Dominion gets its license to build and operate a third reactor isn't expected until 2013.

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## **The Virginia Gazette, Williamsburg Virginia > News > Even The Critics Score Surry Highly (VAGAZ)**

By Cortney Langley

[Virginia Gazette](#), March 16, 2011

As reactors at Sendai nuclear plants partially melted down after the tsunami, attention focused here on what to do if it happens at Surry Nuclear Power Station.

All of Williamsburg, most of James City County and significant portions of York County lie within a 10-mile radius, where most emergency efforts are planned. Prevailing winds would likely blow released radiation this way.

The Surry station earns high safety marks among federal regulators and even among private nuclear watchdogs. David Lochbaum, a former nuclear power engineer who monitors safety issues with the Union of Concerned Scientists, reviewed all public information on 10 reactors for a special report on plant safety. "The Surry plant was the safest plant of the 10 we monitored," he said. "It was also the lowest cost electricity producer among the ten. We attributed this unlikely pairing to Surry aggressively looking for problems and doing a better than average job of fixing problems right the first time."

The power company Dominion has a four-tier alert system for emergencies. Under the least dangerous, "notification of an unusual event," local officials are briefed. An approaching storm, for example, could trigger a notification.

A "general emergency" marks "the most serious problem," meaning core degradation or meltdown. Sirens are activated and radioactive matter could be released. Sheltering or evacuation is likely.

Alarms have sounded twice at Surry in 25 years, Dominion Nuclear spokesman Rick Zuercher said Tuesday. Neither situation involved radioactivity or the reactor side of the plant.

In 2006 two reserve electrical transformers failed. Both were part of the plant's backup power system, but diesel generators kicked on automatically.

More serious, in 1986 a pipe in the turbine building broke. Steam from the pipe killed four workers and injured four others. Plant operators activated the alert to summon local assistance, though no radiation was released, Zuercher said. More — Find more information at [www.dom.com/about/stations/nuclear/emergency-plans/index.jsp](http://www.dom.com/about/stations/nuclear/emergency-plans/index.jsp) or the Virginia Department of Emergency Management [www.vaemergency.com](http://www.vaemergency.com).



## Is The Surry Power Plant Safe? (WTKR/NNDP)

[WTKR-TV Norfolk, VA](#), March 16, 2011

Radiation, infiltrating the air by way of thick plumes of black smoke rising from the Japanese power plant.

"Before I saw the tsunami in Japan, I wasn't all that concerned with it, but now, it's something to think about, it really is."

That's because the Surry Power Station, and it's two nuclear reactors, sits along the James River, and it's practically in Tracy Knight's backyard.

Having the 16-hundred megawatt power plant as a neighbor was never a big deal for her, until the disaster last weekend.

NewsChannel 3 took action and went to Dominion Virginia power to ask, "Are we safe?"

According to Rick Zuercher, of Dominion Virginia Power, "We are safe here. Our nuclear power plants are among the top operators in the industry."

A geologist in Virginia says there may be some old fault lines somewhere underground in Surry, but because they haven't moved in millions of years, there's no real cause for concern.

"I don't think that we would see a tsunami, necessarily, at the Surry Power Station, but we could see a surge in a big storm and we evaluated that and fixed the station to be able to withstand that" says Rick Zuercher of Dominion Virginia Power.

## Wednesday's Last Word On Tuesday (VAGAZ)

[Virginia Gazette](#), March 16, 2011

Mooretown extension

"The Mooretown Road extension is just another unnecessary way for developers to make money. Wake up and look around. We don't need it. It's just more destruction of beautiful farm and woodlands we need to preserve."

"After reading in the Gazette about the struggling retail sector and plans to extend Moore-town Road, I have to wonder where the local retail merchants' voices are in this. They are losing customers to evermore far-flung new retail development, and finding themselves with empty storefronts where their neighboring businesses used to be. Why don't they speak to the James City supervisors who supported the extension?"

Public employees pension

"Yes, everyone pays taxes, or should. From the police officer who faces danger daily, the firefighter who runs into a burning house to save a family, the medics who keep someone alive while rushing him or her to the hospital, and the teachers who teach children and can have a more positive affect on children than a lot of parents. They don't do these jobs for the money. Why does anyone who pays taxes have the gall to complain about the pensions and benefits these public servants work hard for every day? Thank these folks instead of blaming them for the economy."

James City issues

"If John McGlennon will no longer be in Jamestown District, why can't he simply run in Roberts District?"

McGlennon could, if he is redistricted.

Daylight Savings Time

"I don't like this time change. I do not like getting up in the dark. Does anyone really benefit from it? Why does it start so early? It isn't even spring yet."

Surry Nuclear Plant

"The comment in the March 12 Gazette about the pill given to residents of greater Williamsburg and James City was not 'Tongue in cheek.' We were actually given an iodine pill to help protect the thyroid in the event of an incident at the power plant in Surry. The June 27, 2007, Gazette included an article on the power plant following a highest level of alert drill. Most of us are unaware that we are a stone's throw from the Surry Nuclear Power Station. Those of us who live outside the 10-mile radius no longer receive the Surry calendar, which gives information on drills, evacuation policies. In light of the damage to Japan's power plants, this might be a good time to make residents aware of the unlikely but potential danger and state of preparedness."

Family Service Day

"There is an angel among us in greater Williamsburg — Charlie Marcotte of American Pride Auto. I attended his recent Family Day for single parents and was treated to an oil change by his wonderful staff. I am a hardworking, single mother who works two jobs to keep a roof over my children's head. I do not receive public assistance, nor am I looking for handouts. Marcotte understands how financially difficult that can be. It was such a great feeling of relief to catch a break. I cannot thank him and his staff enough. I recommend American Pride. Not only will you receive quality workmanship and service, you will support a small business that gives back in a big way."

Phys ed in schools



"Concerning the 'Muscles flexed over phys ed law' article (March 12 front page): In the paragraph about more teachers would be required, it states 'Adding 10 (I'm assuming teachers) would cost about \$500,000 in York and \$1 million in WJC.' Would someone be so good to explain why a teacher is paid \$50,000 in York and twice as much in WJC?"

The figure provided by WJC for additional teachers needed was low (it needs 13). Also, WJC typically hires teachers with more experience than York.

School issues

"My son attends the only middle school in WJC without an active Student Council, National Junior Honor Society, or Battle of the Books program. This is a disservice to every student who would like to participate to give service to the school and community, or to receive recognition for reading. I am outraged to realize my tax dollars are being spent on sponsors for these activities who are paid for doing nothing."

"I hope Central Office's new location at James Blair is permanent. It is closer to schools and customers. The previous location was too far away."

Are teachers lazy?

"I am tired of teachers saying they're overworked and underpaid. They make over \$45,000 a year and work 200 days a year. There are people making the same or less who work 360 days a year. There are a few who are sincere, compassionate and work hard, but the majority of teachers don't care."

"I guarantee you that in the time it took the person to make such a senseless and rude inquiry, I finished the Virginia Standards of Learning thanks to the help of my teachers. Teachers are people just like you, some are disorganized, but alas what class of people aren't? Lazy, you say? I think not. They work to keep us children under control to shove information into our brains for six hours a day. As for this mythical three-month vacation, they work through it, creating lesson plans, teaching summer school, and getting kids ready for the next year of education. My band teacher teaches us through the summer, getting us ready for the marching band season. And your disrespect for adolescents brought about by flash judgment and societal differences is appalling and rude. We are people, we have rights, opinions and clear, concise thoughts. When you talk to me like a 5-year-old, it shows disrespect, which will always be returned with more of the same."

"To the responder of the March 9 'Are teachers lazy': The intent of the piece was to goad students into participating in public discourse by expressing a cogent written opinion on how some people in the media describe teachers. The mindless, meaningless texting comment was a prod to rile up students and inspire them to pick up the pen instead of the Blackberry. It seems the generalization that was made has some truth to it since not many students have commented."

Lazy teens

"I have been trying to hire a teenager to do weeding and yard work, with no luck. Lawn and garden professionals say forget it. I am not your next house payment. One 16-year-old did show up with his mother driving him. When she heard that her child was going to have to do dirty work, she told him to get back in the car. I don't want to hear about teenagers needing work. They don't want to work unless it is at a clothing store or someplace to socialize with their friends. I guess the illegals are the ones who want work."

Fishing spot

"My wife and I were fishing by the bridge leading to Jamestown Island recently when we were approached by two rangers. We were told we were breaking the law and they suggested we leave. I, as well as others, have been fishing that exact spot since 1964. I have been checked by just about every park ranger, game warden and Marine Patrol officer through the years, and I have also fished side by side with some of them. I have never had a problem until now. Why is this happening all of a sudden?"

Does anyone know...

"I'm downsizing and must sell or donate a Rodgers Theater organ, Olympic model is perfect for church services or a theater. Call 592-7770."

"To the person who needs help with eBay: You will not make much if you hire a broker. Determine what it will take to ship your item. The post office offers free priority shipping boxes. If it fits, it ships at a flat rate. Set up an account on eBay. If you don't have Internet in your home, go to the library where someone will help you. Sign up for a personal PayPal account. It's free. List your item and sell it."

"I'm looking for a place here to donate old trophies. Call 234-0769."

"On March 5 or 6 around 7:30 a.m., I saw a hot air balloon descending along Longhill Road, heading toward the Baptist church. Did anyone else see it? Did it land or did it take off again?"

"To the person seeking a doctor who accepts Tricare Prime: I recommend Dr. Glen Ross, in Port Warwick. I am a veteran, and he is the most caring, understanding and patient doctor I have ever been to. Call 594-1837."

"I'm looking for someone willing to part with a few tiger lillies. I'd love some for a garden zone. Call 741-2083."



"To the person looking to sell items on eBay: Call 254-7852."

"Does anyone know why my daffodils have healthy green leaves but no flowers?"

"Does anyone know someone who repairs aggregate driveways?"

"To the person looking for help with a lawn: Call Colbie at 207-0702."

"To the person looking for someone in this area who is skillful at doing alterations on ladies' clothing: Call Bonnie at 784-6213 or 220-8591."

"I'm trying to start an arrowhead collection for my grandson. If anybody knows where I could get some arrowheads, call me at 903-2272."

"Is anyone collecting prom dresses this season? I have some to donate that might be needed for local middle- and high-schoolers."

"After nearly five years and more than six housekeepers, none of whom knew how to clean a house, I finally found someone wonderful who cleans and straightens. Call 812-9200."

"I have for free a couch. Must be picked up. Call 469-3350."

"Does anyone have a DVD player in working condition that's no longer needed? It's for my children. We are currently living in a hotel. Call 849-3494."

"I'm starting a support group for RSD/CRPS. It is open to anyone in need of a support system to assist in adjusting to the life-altering disorder. E-mail Erin at wmbg\_rsdsupport@hotmail.com for info."

"Does anyone know if Chez Trinh will reopen? What a shock to find it closed."

Tongue in cheek

"I am recommending that the Gazette Police Blotter also include the religion of the accused, so that our local lawmakers can conduct public hearings to determine if we have local cases of active Baptist, Catholic or Jewish radicalism."

Foreign workers

"Has anyone noticed the large number of foreign workers in area restaurants? Is this an indication that Americans no longer wish to work? With unemployment hovering around 10%, it would seem that Americans would be clamoring for these jobs."

Driving along

"When driving in a parking lot, if you approach a pedestrian the appropriate and preferred behavior is to drive around the person rather than blow your horn. I'm told from reliable sources that pedestrians always have the right-of-way. Please extend this courtesy."

"People with automatic headlight switches should read their owner manual. Rear lights don't automatically turn on. Auto manufacturers of these automatic light switches should be fined \$100 per vehicle until all of them have been replaced. There are a bunch of fools driving the roads."

Customer service

"My wife and I visited a certain department store's electronics section the afternoon of the iPad 2 release. Anice young man was answering our questions when a manager rudely interrupted and became loud and disrespectful. He said we were asking a lot of questions and that we could line up right at the cash register 'right now.' We attempted to report this to the store manager, but the associates called the same manager to meet us. He continued to be rude. This bad apple needs help."

"Cheers to the manager on duty Friday night at Regal New Town movie theater. The manager did a very nice thing for my family."

"I congratulate the associates and customers at Walmart on Rochambeau Drive. The company announced that Williams-burg was chosen Store of the Year, which shows the great work ethic of the local associates and wonderful customers. This store was chosen No. 1 from among 4,000."

Predatory towing

"On March 8 and 9, a towing company was ready to tow from Bristol Commons although no signage or painted curbs prohibit short-term parking at the particular spot. The property management company reports that the towing outfit has no contract, and is authorized to tow only upon request by either of two officers of the board, which was not the case on those two days. When the vehicle owners appeared, the tow truck operator demanded a release fee of \$75, although Virginia law allows a maximum of only \$25."

Bravo!

"Last Saturday, my husband and I had the first experience of seeing a CAPA Fund musical production. 'The Roar of the Greasepaint' was one of the best of the local theater group production we have ever seen. The story was smart, the direction superior, the music and dance lively and professional. But these entertaining qualities only touch the surface of the production's deeper meaning and clever symbolism, which were masked behind a bright facade of song and dance."



"For years, I have seen CAPA Fund productions and loved them. However, in speaking with Parker Krug, the young man who played Cocky in the recent production of 'Greasepaint,' I now understand the mission behind organization. He explained how most theater organizations just put on a production and how CAPA Fund actually chooses productions that best showcase performers who are in training for the profession. When Krug told Ron Boucher he never had the opportunity to do a leading role throughout high school or in colleges, this musical was selected especially for him to showcase his talents. If CAPA Fund is looking for supporters, I would recommend marketing that concept."

#### Homeowner insurance

"My homeowners insurance policy premium has gone up by 28% for the same coverage of the previous year. When asking why this obscene increase would be justified, I was told that everyone in this area was affected because of increased costs. Just what these costs are I do not know. I can only wonder if we homeowners are supplying stimulus funds instead of Washington."

#### What we need

"I must not be the only one who is trying to eat healthier, but we have no real health food store in greater Williamsburg now. Whoever leases space in Colony Square would like to have a tenant move in to take the space to be vacated by Fresh Market. If they can't get Whole Foods, why not a good health food store or an Asian market? All the recent good health cookbooks use health food items and/or Asian items. Whole Foods would bring in customers and I would hope the Asian market would as well."

#### State politics

"I can hardly wait for the 2012 election for US Senator. Republicans are likely to offer George Allen, while the Democrats are expected to offer Tim Kaine. Now if we can only get Jim Gilmore to run as an independent, we can select from among the three poorest ex-governors in the past 30 years. While I did not vote for Jim Webb in 2006, he has been a source of badly needed fresh air in Washington and will be missed."

#### Host families

"We at International Student Exchange are seeking host families immediately for high school foreign exchange students for the next school year. Students come from Europe, Asia and South America; have their own spending allowance and health insurance; are fluent in the English language; and fully screened before being accepted into the program and supervised for the duration of their stay. Program length is for the academic year. Families choose their student based on shared interests and hobbies. For more information, call Welby Whiting at 566-1225 or e-mail at [welbyw@aol.com](mailto:welbyw@aol.com)."

#### Cheers & jeers

"When I left a restaurant recently, a City of Williamsburg employee named Roger was standing next to my car. He informed me that he had backed into my front bumper, causing minor damage and that he had already called police. I was taken aback by his gracious actions. My rear bumper was hit a few years ago, however, no one even left a name or number. Roger restored my belief that there are a great number of good people around."

"We loved the Gazette's March 12 'Music School Dad' column by humorist Charley Shrack. Is he a regular contributor? Where can we read more of his stuff?"

Shrack moved to the area about a year ago. This was his first submission to the Gazette.

"Cheers to Shear Magic in New Town. I have been going there for several years, and I think Barbara and her staff are terrific. I love to experiment with my hair: curly, straight, long and now short. Barbara listens carefully and prevents me from making huge mistakes and encourages me to try different styles."

"I found the most amazing shop named Merle Norman Cosmetics and Gifts in Monticello Marketplace. It sells an amazing selection of designer purses at reasonable prices and has a great selection of wigs, cosmetics, hats and jewelry."

"Robert has done gardening work for me through the years and does first-class work. He is rare in that he is prompt, honest and very picky about his work. His company is Twin Leaf ground maintenance and landscaping, 967-7719. It is rare to see someone take as much pride in his work."

"How did Ford's Colony get away with a yard sale indoors where there were wall-to-wall people and shoppers could not budge? Where was the fire marshal to control the crowd?"

"We are subjected to an overabundance of so-called reality shows on television these days. If you want a dose of true reality in a television program, watch 'Coming Home' on Lifetime on Sunday nights."

"If you're looking for a great pizza or an outstanding cheese steak sub, check out Danny O's on Olde Towne Road. A quiet little place but food is great as is the service."

"My husband and I recently took a sensational class titled 'The life and music of Irving Berlin, Richard Rodgers and Oscar Hammerstein.' The teacher urged us to tell our children and grandchildren about this magnificent work of art. I would like to urge readers 55 and up to join the Christopher Wren Association and share in this delight. I think this class should have an assembly program in every area high school."



"I found a great website for finding or rating doctors in our area, [www.vitals.com](http://www.vitals.com). I found my plastic surgeon using this site and was very pleased. If you decide to rate a physician, please be fair and honest, covering good points as well as any negative issues you might have."

"Thank you to my neighbors in Creekside Landing who stopped to help me when my dog had a seizure while we were on a walk last Saturday. I didn't think to get your names, but I appreciated the help. He seems to be doing fine now."

"The JOY Singers, a senior citizen choral group in greater Williamsburg that performs at local assisted-living facilities, is looking to expand and needs more men. Requirements: Be over 55, have a love for music, enjoy the old songs and not be tone deaf. Rehearsals for a new program start soon. Call Richard at 253-6907."

#### Fish fries

"A few weeks ago, someone mentioned fish fries and how they got people to go out. A fish fry dinner typically consists of a piece of haddock or cod bigger than the plate with cole slaw and either German or American potato salad or french fries, or mock perogies, for less than \$10 at your local neighborhood eatery and less than \$7 from your local seafood, meat or supermarket. A recent survey indicated that 33% can't get enough, 55% an occasional treat and only 12% not interested out of 926 votes. Some make this an affordable weekly treat for the family."

#### Disposal units

"Well-done, Stonehouse Glen for erecting two doggy disposal units along Fieldstone Parkway and in your community. Now if only we can get our homeowner association board at Millpond at Stonehouse to do the same thing."

#### Budget

"My two cents' worth on Congress and the national debt or deficit: This trickle-down system that the Republicans have in mind is cutting everyone's income but theirs. If they are really honest on the cutting of the budget, then they should cut their salary by about \$10,000. They have to cut out the waste and abuse and stealing of the tax dollars. And I have no use for any of the congressmen who let the Wall Street gang off the hook."

### As Monty Python Says: Run Away (FFLS)

[Fredericksburg Free Lance Star](#), March 16, 2011

Leave a Reply Click here to cancel reply. Name (required) Mail (will not be published) (required) Website XHTML: You can use these tags:

The North Anna Power Station in Louisa. (FLS file photo)

Dr. Brooke Rossheim, director of the Rappahannock Area Health District, said last night that he thought it was instructive that Japanese authorities are distributing potassium iodide pills to those who live near the disabled Fukushima nuclear power plant.

What that probably means, he said, is that levels of iodine-131 around the plant are higher than they should be. The material has been released from the damaged plant into the atmosphere, according to news reports. And once it exceeded certain limits, he said, the pills were distributed.

At least that's what would happen should something similar happen at the North Anna Power Station in Louisa County, Rossheim said.

"The first rule for a radioactive release is you want to get away from the area," Rossheim said. "Time and distance are what radioactivity are all about."

If exposure does occur, the iodide pills can be useful to protect the thyroid.

"You bind up all of those iodine-binding sites on the thyroid, so that if any radioactive iodine is inhaled or ingested, there's really no place for it go," he said. "What happens then is that it's excreted in the urine."

The Health Department has a supply of the pills at its local offices and is offering them free to those who live within 10 miles of the North Anna plant.

### Potassium Iodine Effective Against Radiation? (NWPRTNWZ)

[Newport News \(VA\) Daily Press](#), March 16, 2011

Potassium iodine effective against radiation?

In response to the potential meltdown of a nuclear power plant in Japan, the nation's officials have distributed potassium iodine tablets to residents at risk of radiation exposure. However, ProPublica's Marian Wang reports that US authorities have recently questioned whether the benefits of these pills have been exaggerated or misunderstood.



Potassium iodine, or what's known as KI, "is not an 'anti-radiation' drug," then-White House official John Marburger wrote in a 2008 memo. "Public misunderstanding of KI and its limits may lead to a dangerous sense of false confidence that KI provides inoculation against all forms of radiation."

The US Nuclear Regulatory Commission's current position is that iodine pills don't make sense beyond a 10-mile radius.

The Peninsula Health Department used to issue these tablets in the event of a disaster at Surry County's nuclear power station. Read more here: Tsunamis don't scare Surry nuclear plant operators

Read the full story on the Pro Publica website, [www.propublica.org](http://www.propublica.org) and click on the Blog tab. For all your health information, go to [www.dailypress.com/health](http://www.dailypress.com/health)

## **NRC Tapping Tech For Better Analysis Of Nuclear Accidents (CPTRWORLD)**

By Jaikumar Vijayan

[Computerworld](#), March 16, 2011

Long before the nuclear disaster in Japan began unfolding this week, scientists in the US have been trying to gain a better and more realistic picture of precisely what would happen if a similar accident occurred in this country.

For the past few years, researchers from the Nuclear Regulatory Commission (NRC) have been engaged in a project called State of the Art Reactor Consequence Assessment (SOARCA), to better understand how a nuclear reactor would behave in a severe accident, as well as what sort of radioactive release it would cause.

Similar research on hypothetical accidents at nuclear power plants have been conducted by the NRC and international nuclear safety groups for the past 25 years.

What's different with SOARCA, says the NRC, is that it uses modern computing resources and modeling software to generate more accurate and realistic accident simulations. It also examines extremely rare, "one-in-a-million"-type accidents that could have a significant impact.

Such modeling and analyses of hypothetical accidents is designed to help stakeholders develop better protections and responses to nuclear accidents.

SOARCA models also take into account some of the new accident mitigation technologies and strategies that are deployed in nuclear power plants these days. The models factor in updated emergency preparedness measures and plant improvements that were put in place after the 9/11 terrorist attacks.

The studies are receiving renewed attention in light of engineers in Japan currently trying to avert a full-scale meltdown of the country's Fukushima nuclear power plant.

The plant was damaged severely in last week's earthquake and subsequent tsunami. Concerns about the safety of the plant have been escalating sharply over the past few days.

Those concerns were further heightened today after a third explosion rocked the facility causing radiation levels to increase to potentially dangerous levels.

The NRC said on Monday that it has sent several nuclear experts to Tokyo to provide assistance to officials there.

Among other tasks, the team's mission is to better understand the potential impact of radioactive leaks on people and on the environment, the NRC said in a statement Monday.

As part of SOARCA, the NRC has run computer modeling and simulation tools to study at least two operating nuclear power plants in the U.S over the last couple of years.

One of the plants that participated in the initial phase of the NRC's SOARCA project is the Peach Bottom Atomic Power Station in Pennsylvania. The plant features a boiling water reactor (BWR) similar to the most troubled reactors in Japan. The other plant is the Surry Power Station, a pressurized water reactor (PWR) in Virginia.

The commission did not respond to requests for comment on the status of its SOARCA project.

Publicly available information on the project states that the project's goal is to develop an enhanced understanding of the consequences of a nuclear power plant accident involving the release of radioactive material into the environment. SOARCA will give the public and decision makers the "latest basis" for assessing the consequences of severe accidents at nuclear power plants, the information notes.

The study also is designed to examine the value and the extent to which existing defense-in-depth measures at nuclear power plants will mitigate potential fallout in an accident.

According to a FAQ on the NRC's Web site, SOARCA is a research effort that seeks to "realistically estimate" the outcomes of the leak of a nuclear power plant's radioactive material.



A core component of SOARCA's tests is a software tool from Sandia National Laboratories called MELCOR . The NRC describes MELCOR as software that can be used to model the "progression of severe accidents in light-water reactor nuclear power plants."

The NRC also uses a separate software tool called MACCS2 to study the potential health implications of an accident involving radiation leaks.

"MELCOR is designed specifically for the purpose of predicting the response of nuclear power plants to severe accidents that might be initiated by low frequency events involving multiple safety system failures," said Randall Gauntt, the manager of Sandia's severe accident and consequence assessment department.

One of the scenario's the software is designed to model is a so-called Station Blackout scenario initiated by seismic damage, similar to what is happening in Japan right now, he said.

"The MELCOR code analyzes severe accidents in nuclear power plants, their progression through core melting, should inadequate cooling be available, and the release to the environment should containment systems fail," Gauntt said.

The potential public impact of radiation leaks are evaluated using the MACCS code, which was also developed at Sandia for the NRC, Gauntt said.

## **Japan Disaster Prompts Worries About Possible New North Anna Reactor (CHARDP)**

By Bryan McKenzie

[Charlottesville Daily Progress](#), March 16, 2011

Japan's swamped and damaged nuclear power plants have sparked a spate of comments on Dominion Virginia Power's proposal to build a third nuclear power generator at the North Anna Power Station.

But Dominion representatives say the differences between the four troubled Japanese reactors and North Anna's plants are extreme and that similar issues are unlikely here.

Members of the state Department of Environmental Quality are nearing the end of a public comment period on a proposal to build a third nuclear generator at Lake Anna. They are accepting comments until Friday. Of the comments received so far, nearly half reference the earthquake- and tsunami-caused crisis in Japan.

"So far we received about 25 comments," said Ellie Irons, of the DEQ. "The last 12 mention the Japanese disaster."

Irons said most of the comments question whether enough water exists in Lake Anna to cool three reactors.

"Japan was mentioned after the earthquake to support the argument that there is insufficient water to support a third reactor," Irons said. "It is not unusual in our review process for the public to comment on current issues and compare them to a project under review."

On March 11, a record earthquake of a magnitude of 9.0 struck about 110 miles from the Japanese nuclear plants at Fukushima. Official reports indicate the reactors immediately shut down and backup generators automatically started to cool the nuclear cores. Then a tsunami, estimated to be nearly 20 feet tall, crashed over protective walls, destroying the generators. The cores began to overheat and explosions and fires have ensued.

The incident has prompted questions about nuclear power. Officials in Germany put plans to extend the life of that country's nuclear plants on hold and Switzerland suspended plans to build and update plants.

Dominion officials, however, intend to continue with plans for the new Lake Anna plant, though the company has not made a final decision whether to build the third unit. A fourth nuclear generator, not in the permitting process, is also on the books for the future.

Officials note that the Lake Anna site is hydrologically and geologically different than the Japanese Fukushima site. The Lake Anna site is seismically quiet compared with Fukushima and tidal waves are not an issue, officials said.

Richard Zuercher, of Dominion, said Lake Anna's facility is built to withstand the historically strongest earthquake recorded in Virginia, as well as hurricanes and tornados.

"Our backup generators are protected in concrete bunkers and are tested regularly and required to start up within 10 seconds," Zuercher said. "There has been a lot of thought put into nuclear power plants and we've continued to upgrade Lake Anna to make sure it's up to date."

Some residents in the area say they support nuclear energy and are less concerned about the Japanese scenario than whether the lake can support cooling a third reactor without overheating the entire lake.

"Lake Anna was built to provide both cooling waters for the reactors and also to provide for residential development around the total lake, plus recreation to all throughout the state and other surrounding areas," said Harry Ruth, on behalf of the Friends of Lake Anna. "One purpose should not have dramatic potentially negative impacts on the other. A win-win project can be achieved if we all work together to mitigate the concerns."



BJ Blount, a real estate agent, developer and lifelong resident of the Lake Anna area, said he is not concerned about the impacts of a third reactor.

"We trust Dominion Power. They've always been a good partner. They've addressed any issue that has come up. I think they've done a good job of looking out for the lake and the residents," Blount said. "They have a better safety report card than any power plant up and down the East Coast."

## **Nuclear Nightmare: Could A Japan Happen Here? (HOOK)**

[The Hook](#), March 16, 2011

The disaster in Japan sparked by the massive undersea earthquake and resulting tsunami on March 11 is a terrifying reminder of nature's fury. But the natural disaster may pale in comparison to the toll wrought by potential meltdowns at several of Japan's nuclear power stations. Could disaster strike at the Dominion North Anna Power Plant in nearby Louisa?

That seems to depend on who you ask.

Actual earthquake damage to North Anna is not likely, according to UVA Geology professor Thomas Biggs, who notes that while Virginia does lie atop several faults, none seem likely to spawn major quakes. In fact, he says, the several small earthquakes in the past decades-- including two in 2003-- have remained under 4.0 on the Richter Scale. That's enough to rattle but certainly not topple houses-- or nuclear reactors.

"All of our faults are pretty old," says Biggs, noting that while there are some along the Atlantic Coast that are "mildly active," but not anything like the places that have recently suffered major earthquakes.

"We don't have the tectonic setting they have in Japan, Chile, New Zealand," says Biggs, noting that California, due to its position atop two tectonic plates sliding side by side, remains at highest risk for major temblors.

Even if a massive quake did somehow trigger an East Coast tsunami, Biggs says, Charlottesville (and the North Anna plant) wouldn't be within reach of the wave. But, he notes that while a wall of water reaching us here-- nearly 600 feet above sea level-- is highly unlikely, it is possible. Biggs mentions the Chesapeake Bay impact crater, which wasn't well understood by geologists until 1993.

More than 50 miles across and nearly a mile deep, the crater suggests a massive meteor impact occurring approximately 35 million years ago that sent water, rock, and sediment miles into the sky and caused an unimaginably massive tsunami to wash over even the Blue Ridge and reach what is now Staunton. (If such an event does recur, may we suggest that you head west on US 250 to reduce the almost certain traffic snarl on I-64?)

If direct quake damage to the power station is unlikely, there are realistic reasons to be concerned about North Anna, according to Elena Day of the Charlottesville-based People's Alliance for Clean Energy, which has been fighting expansion plans there and calling for greater security measures at the existing reactors.

Day mentions the relatively small amount of water available from the 9,600-acre Lake Anna for cooling the reactors if a problem occurs-- a shortage that worsens during drought conditions. Should a mechanical failure of the cooling system occur, says Day, noting the 1986 Chernobyl disaster in the former Soviet Union, there's also a chance that the back-up generators could fail, allowing the fuel rods to overheat and release potentially large amounts of radiation.

Nuclear industry experts say current safety standards in the US far surpass security measures in place at Chernobyl or even at the US nuclear power plant at Three Mile Island, where a partial core meltdown occurred in 1979. But Day remains concerned with North Anna, including the fact that the water used to cool the fuel rods is pumped back into the lake at high temperatures, a kind of thermal pollution that can harm flora and fauna and which she describes as a violation of federal law.

But perhaps the greatest threat of catastrophe, Day contends, would come from damage to the dam that maintains the water at North Anna. Noting that there's no other large scale water supply, she says overheating would be nearly inevitable.

"Somebody could drive a truck loaded with dynamite and breach that dam, and then what?" asks Day.

Dominion's manager of nuclear public affairs, Richard Zuercher, says the company has extensive security in place to protect the dam from attack, and says the plant is built to withstand an earthquake more powerful than any on record in Virginia.

"Our operators," says Zuercher, "are trained on every imaginable accident, scenario, or condition."

Possibly related on the Hook

## **Hoyer: Let's Re-look At Nuclear Plant Safety (WT)**

By Sean Lengell

[Washington Times](#), March 16, 2011

Recent EntriesHoyer: Let's re-look at nuclear plant safetyNevada's Heller to run for Ensign's seatEhrlich joins public-policy law practiceHoyer: GOP must lead on spending billLast WWI vet to be interred at ArlingtonSean Lengell's Recent EntriesHoyer:



Let's re-look at nuclear plant safety Nevada's Heller to run for Ensign's seat Hoyer: GOP must lead on spending bill Last WWI vet to be interred at Arlington House Dems: Please tweet us Election Links Drudge While Japan holds its collective breath as earthquake-damaged nuclear power plants there teeter on the brink of meltdown, House Minority Whip Steny H. Hoyer said Tuesday he remains a supporter of nuclear power in the US

But the Maryland Democrat added the issue in Japan is a "wake-up call to look very seriously at the safety" of nuclear reactors worldwide.

"As one who has a reactor in my community in Calvert County and who is a strong supporter of nuclear power, I share the views that we have to look very carefully at the safe operation of those plants and the security of those plants," Hoyer told reporters during his weekly briefing with reporters at the Capitol.

"I'm sure the [Nuclear Regulatory Commission] should and will analyze the events in Japan and learn from what has happened in Japan and apply them both to those presently in existence and to those that may be designed and built in the future," he said.

Hoyer said that nuclear power plays an important role in the push to make the US less dependent on foreign oil.

"If we are going to reach energy independence — which I think is absolutely essential — frankly, I think we need to utilize all of the energy sources that are available to us, and we need to transition as quickly as possible.

"But, you know, what has happened in Japan clearly ought to motivate us to look very carefully at present facilities, including Calvert Cliffs" in Maryland, Hoyer said.

### **UPDATE:US Rep Hoyer: Japan Nuclear Disaster Should Be 'Wake Up Call' For US (DJNews)**

By Corey Boles

[Dow Jones Newswires](#), March 16, 2011

Full-text stories from the Wall Street Journal are available to Journal subscribers by clicking the link.

### **Closest Nuclear Power Plant To DC Called Safe (WMAL)**

By Jen Richer

[WMAL-AM](#), March 16, 2011

WASHINGTON -- Metropolitan Washington gets part of its electricity from nuclear power plants, but one local utility official says "not to worry".

Brew Barron, CEO of Constellation Energy says residents of Lusby and Calvert County can be confident of the nuclear safety measures at Calvert Cliffs, which has more layers of backup protection systems than the ones in Japan.

The Calvert Cliffs facility, which employs 900 people, was recently relicensed for another 20 years of operation.

### **Expert: Nuclear Power Sees Uncertain Future Again (WBAL)**

[WBAL-TV Baltimore](#), March 16, 2011

BALTIMORE --

Nations across the world that use nuclear power are looking closely at the safety of their power plants as the nuclear crisis in Japan unfolds

, and many are wondering what the future of nuclear power is.

In Europe, energy officials are applying stress tests to their plants. Germany is switching off seven of their reactors, one permanently.

The crisis in Japan again exposes the downside of nuclear energy. It was first exposed at Three Mile Island in Pennsylvania

on March 28, 1979, when an accident caused by faulty equipment and bad decisions led to the partial meltdown of one of the reactors.

No one was killed or injured in that accident, but the confusion, chaos and fear that came with it dealt a long-lasting blow to the expansion of nuclear energy in the US New nuclear reactors are being considered in the US, but no new plants have been approved since the Three Mile Island accident.

Recent years had come to be known as the nuclear renaissance -- the growing acceptance of nuclear energy as a clean, green and effective answer to the country's dependence on foreign oil.

But economist Anirban Basu, of the Sage Policy Group, said he thinks what's unfolding in Japan is a game-changer.

"One fears, if one is an advocate of nuclear energy, that for now, the nuclear renaissance is over in America," Basu said.

Basu predicted a whole new round of soul-searching will happen as a result of Japan's crisis.



"Undoubtedly, many studies will be done now about the safety of nuclear power plants and new technology and what happened here. In the meantime, new nuclear development will not take place," he said.

A new reactor at Calvert Cliffs in Maryland is part of the plan for the future. Gov. Martin O'Malley on Tuesday expressed his support for a new reactor.

"Calvert Cliffs is designed to withstand the most disastrous scenarios," the governor said in statement. "Regular safety scenarios are exercised to ensure the highest levels of preparedness."

At one time, the Calvert Cliffs III plan was thought to be a model for nuclear power expansion in the US, but then Constellation Energy backed away from the deal with a French partner, leading to a whole new round of uncertainty.

"One has to think, given what's happened in Japan, that financing will be that much more difficult. Insurance will be more expensive, and so, whatever the delays were going to be, I suspect they'll be much worse going forward," Basu said.

Three Mile Island led to sweeping changes in safety and regulations for nuclear power. Jayne Miller covered that story extensively when it happened and detailed her thoughts on the matter in her blog, which is linked above.

## **Maryland's Emergency Nuclear Plans « Maryland Morning With Sheilah Kast (WYPR)**

[WYPR-FM](#), March 16, 2011

In Fukushima, Japan, dangerous levels of radiation are escaping into the air at the nuclear plant after an explosion occurred. Leaders there are telling people within 20 miles of the nuclear plant to stay indoors.

Despite these events, the Obama administration has said it's not backing away from pursuing nuclear power as an energy source.

Yesterday, we asked Governor Martin O'Malley's office about whether he would like to move forward with plans for Calvert Cliffs 3. A spokesman for the governor, Shaun Adamec, wrote back in an email:

The short answer is yes. Calvert Cliffs is built to withstand an earthquake of the magnitude that is possible in our area. State emergency response exercises yearly, and have used an earthquake scenario before. We have plans that deal specifically with the plant and immediate population (as required by federal law) and there are warning systems in place and pre-determined evacuation plans. We have identified 10 mile plume zones and ingestion zones. Annual outreach with community is done and they are familiar with the plans. All this is to say that the Governor would expect and insist that such plans also be in place for Calvert Cliffs 3.

Sheilah discusses emergency preparedness in greater detail with Richard Muth, director of the Maryland Emergency Management Agency, and Susan Shaw, President of Board of County Commissioners for Calvert County. She lives in Huntingtown, about 20 miles north of Lusby, where the Calvert Cliffs nuclear plants are located.

A note on the conversation: Director Muth told us that the biggest earthquake recorded in Maryland was a 3.0 magnitude one, around the turn of the last century... and that Calvert Cliffs was designed to withstand a 4.5 magnitude earthquake. Earthquakes are measured in logarithms, so according to the U. S. Geological Survey, a 4.5 earthquake is 31.622 times bigger than a 3.0, and 177.827 times stronger.

## **State Nuclear Reactors Designed Differently Than Those In Japan (PIERCWIS)**

[Pierce \(WI\) County Herald](#), March 16, 2011

Officials say Wisconsin won't have to worry about radiation spilling from its nuclear plants, after a release in Japan in the wake of the tsunami.

Viktoria Mitlyng of the US Nuclear Regulatory Commission says the Kewaunee and Point Beach nuclear plants on Wisconsin's eastern shore were made to survive the worst natural disasters on record – with an extra safety margin on top of that. The two Wisconsin plants are about as old as the Japanese plants built in the 1970's. But Kewaunee and Point Beach have pressurized water reactors – while the Japanese units have reactors with boiling water.

Sara Cassidy of the Point Beach plant in Two Rivers says her facility's design and maintenance are based on the worst-case seismic scenario for the plant's location. Mark Kanz of the Kewaunee nuclear plant says its owner, Dominion Resources, will review all of its safety systems to make sure everything's working properly.

The nuclear plants provide about one-fifth of all the electricity used in Wisconsin. The Nuclear Energy Institute says it's premature to make conclusions about the Japanese incident and what it means for the future of nuclear power. Senate Independent Joe Lieberman of Connecticut is calling for a re-assessment of the industry. The Obama White House says nuclear is part of the president's overall standards for cleaner energy.

## **US Nuclear Plants Differ From Those In Japan, Industry Rep Says (MJS)**

By Thomas Content



[Milwaukee Journal Sentinel](#), March 16, 2011

Key differences separate US plants from those involved in the Japanese crisis, notably the location of fuel tanks for diesel generators that provide backup power to keep reactors cool during a catastrophe, a representative of the US nuclear industry's chief lobbying group said Tuesday.

In Japan, the aboveground diesel tanks washed away when the tsunami flooded the nuclear complex. US plants that would be vulnerable to tsunamis have taken precautions, such as burying their diesel tanks underground or building critical safety equipment at high elevations, said Tony Pietrangelo, senior vice president and chief nuclear officer at the Nuclear Energy Institute.

"We will put the best minds together to try to fully understand the events occurring in Japan to see if we can glean any lessons learned that could enhance the safety of our facilities," Pietrangelo said.

In Wisconsin, the Kewaunee and Point Beach nuclear plants have underground fuel tanks for diesel generators that would kick in if there were a loss of power and cooling systems needed to keep running, plant representatives said Tuesday.

According to the Nuclear Energy Institute, all US plants are built to withstand the maximum known natural disasters that researchers say can be expected to take place in a given location.

For the Kewaunee and Point Beach plants, that means they are designed to withstand an earthquake measuring up to 5.9 on the Richter scale, said Mark Kanz of Dominion Resources Inc., operator of Kewaunee, and Sara Cassidy of NextEra Energy Resources Inc., operator of Point Beach.

The two reactors at Point Beach and one in Kewaunee supplied about 19% of the state's electricity in 2009.

The Japanese nuclear plants appeared to withstand the earthquake but were overwhelmed by the intensity of the tsunami, which was more extreme than the plants' design was based upon.

As a result, nuclear plant operators around the United States are undoubtedly taking a second look at their preparedness for catastrophes even more extreme than would be expected, Pietrangelo said.

During a congressional hearing Tuesday, US Energy Secretary Steven Chu reiterated the Obama administration's support for nuclear power and said the US will learn from Japan's experience.

On whether the administration should put the brakes on plans for new reactors, he said, "I still feel it's probably premature to say anything other than, 'We will learn from this and all forms of energy do present risks.'"

### **Wisconsin Nuclear Power Plant Operators: Reactors Are Safe (AP)**

[Associated Press](#), March 16, 2011

KEWAUNEE — Wisconsin's nuclear power plant operators say the state's reactors are safe.

The Kewaunee and Point Beach plants are similar in age to the Japanese reactors involved in that country's earthquake and tsunami disaster, but have a different design. The Wisconsin plants have pressurized water reactors while the reactors in Japan use boiling water.

Kewaunee spokesman Mark Kanz says there are lessons to be learned from the tragedy in Japan, so officials are re-evaluating all safety measures they have in place.

WLUK-TV says managers of both plants work closely with surrounding communities to make sure everyone is up to date with emergency plans.

### **Nuclear Power Plant Operators: Reactors Are Safe (WISC)**

[WISC-TV Madison \(WI\)](#), March 15, 2011

KEWAUNEE, Wis. —

The threat of more problems at Japan's nuclear facilities has some in Wisconsin asking questions about the state's own nuclear facilities.

Wisconsin's nuclear power plant operators said the state's reactors are safe.

The Kewaunee and Point Beach plants are similar in age to the Japanese reactors involved in that country's earthquake and tsunami disaster, but have a different design. The Wisconsin plants have pressurized water reactors, while the reactors in Japan use boiling water.

Kewaunee spokesman Mark Kanz said there are lessons to be learned from the tragedy in Japan, so officials are re-evaluating all safety measures they have in place.

Managers of both plants said they work closely with surrounding communities to make sure everyone is up to date with emergency plans.

Some have been asking about what nuclear radiation actually does.



"The average person in the United States is exposed to approximately 6.2 millisievert, which is an international unit (of measurement) every year," said Paul Schmidt, chief of radiation protection at the Wisconsin Department of Health Services.

Schmidt said exposure to radiation is an everyday part of life.

"Microwaves, televisions, computer monitors -- but it's a very, very small component. The biggest component is the natural background radiation from soil, cosmic rays, things like that," said Schmidt.

CBS News reported that 100,000 millisievert would pose a health risk.

Schmidt helps regulate how state agencies prepare and respond in the event of an incident at a nuclear power plant in Wisconsin.

"We do have very well-developed response plans, well-trained people, good response equipment capabilities, and we exercise those capabilities routinely to make sure that if something did happen, we'd be prepared to address it and assist the counties in their response," said Schmidt.

Experts said that even low levels of radiation can lead to health problems, especially in children.

"When people get exposed to radiation, there's a higher incidence of breast cancer, of blood-borne malignancies like leukemia, lymphoma, but thyroid cancer is probably the one that has the strongest link to radiation exposure," said Dr. Rebecca Sippel, an endocrine surgeon at the University of Wisconsin Hospital.

Sippel said that in the years after the 1986 Chernobyl meltdown, cases of thyroid cancer in children increased tenfold.

However, for now, the crisis in Japan is a different situation.

"The radiation dose and the effects of all these accidents are different, so trying to interpret the impact on each patient, I think, is varied on each experience, and I think we learn something new from each of these exposures," Sippel said.

Though a handful of people have asked Schmidt about potassium iodide pills, which help block radiation from being absorbed into the thyroid, Schmidt and Sippel said it's not necessary to take such precautions in Wisconsin and there is no immediate risk in the US.

When asked about whether it's possible for nuclear radiation from Japan to spread to the US, Michael Corradini, a professor of engineering physics at UW-Madison, said the distance between the US and Japan greatly lessens the possibility.

"Even if there is a release, it dissipates and dilutes in a matter of miles to tens of miles, and so there's just not a threat," Corradini said.

Corradini said he didn't think engineers expected this large of a tsunami connected with the earthquake, saying the nuclear plants in Japan survived the earthquake but not the tsunami.

## **Kewaunee Power Station's License Renewed (GBPG)**

By Nathan Phelps

[Green Bay \(WI\) Press-Gazette](#), March 16, 2011

The US Nuclear Regulatory Commission has renewed the operating license for the Kewaunee Power Station for 20 years, the agency said Thursday.

The action follows public hearings and commission review of safety and environmental factors related to plant operation.

"After careful review of the plant's safety systems and specifications, the staff concluded that the applicant had effectively demonstrated the capability to manage the effects of plant aging and that there were no safety concerns that would preclude license renewal," the commission stated in a press release.

Dominion Energy Kewaunee Inc. applied for the renewal in August 2008.

The Kewaunee plant began operation in 1974 and was purchased by Virginia-based Dominion in 2005.

The 574-megawatt plant provides enough electricity for about 140,000 homes, according to the company.

This is the first renewal since the operating license was granted in 1974, said Mark Kanz, local affairs manager at the Kewaunee Power Station.

The initial license spanned 40 years. With the renewal, Dominion has been licensed through the end of 2033.

"We're happy to keep producing electricity for Northeastern Wisconsin for another 20 years," Kanz said Thursday afternoon. "It's also stable employment for the area."

The plant employs about 700 people, he said.

The commission has renewed operating licenses at all four of the nuclear plants owned by Dominion, according to the company.

## **NUCLEAR CRISIS: Failures In Storage Pools, Battery Backups Point To Problems In US Fleet (GWIRE)**



By Hannah Northey And Jenny Mandel

[Greenwire](#), March 15, 2011

Spent fuel at Fukushima Daiichi Nuclear Power Station's Unit 4 caught fire last night and released radiation directly into the air before the fire was brought under control and extinguished, according to the International Atomic Energy Agency (IAEA).

The spent fuel pool, which stores used fuel rods submerged in water as they gradually cool over several years to a temperature at which they can be moved to other storage, is located next to the containment building and is normally under the roof of an outer building.

That outer building may have blown off, as the IAEA reported that the pool was open to the atmosphere and that "Japanese authorities are saying that there is a possibility that the fire was caused by a hydrogen explosion."

Hydrogen explosions have caused the reactor buildings to blow up at the Unit 1 and 3 reactors, and the IAEA also reported an explosion last night at the Unit 2 reactor. Authorities did not immediately report damage at any of the four sites to the reactor containment vessels, the concrete-and-steel structures around the reactors designed to hold in radiation in the event of an emergency.

Yesterday, some experts were assessing the radiation risk from spent storage pools as greater than the danger from the reactors themselves, as emergency crews appeared to be warding off further reactor meltdowns with pumped seawater, and at least one pool – at the Unit 3 reactor – showed signs in satellite images of potentially being compromised and emitting steam directly into the atmosphere.

In a call with reporters, Robert Alvarez, a senior scholar with the progressive Institute for Policy Studies and former deputy assistant secretary for national security and the environment with the Energy Department, said if cooling water in the pools is lost and the spent fuel becomes partially or fully exposed to air, it can overheat and the zirconium protection around it can catch fire. "Then you have the potential for very very significant, long-term land area contamination," Alvarez said.

Indeed, overnight, the IAEA reported that radiation dose rates as high as 400 millisieverts per hour – enough to cause excess cancers in four out of 100 people in just one hour, according to a National Academy of Sciences analysis – were reported at the site. Those levels fell to 0.6 millisievert per hour several hours later, IAEA reported, which they said suggested that local levels of radioactivity were decreasing.

Thomas Cochran, a nuclear physicist, senior scientist with the Natural Resources Defense Council and member of the Energy Department's nuclear energy advisory committee, said that under normal circumstances, the pools do not present a radiation risk even if exposed directly to the outside air.

"It's got a lot of water in it, and it's got several meters of water above [the spent fuel rods], so you can peer over the side and you're shielded from the radiation by the water," Cochran explained, adding that a reprocessing facility in the United Kingdom maintains open-air pools on which seagulls and other birds regularly land.

But he said the occurrence of a fire indicates some sort of damage to the pool itself, to have allowed the water level to so quickly fall low enough for the used fuel to overheat.

"We're days away from this accident; you'd have to walk away from that pool for a long time for that water to evaporate away. So something else has to have happened," he said.

"The problem with this particular design is that the pool – it's like building a concrete swimming pool up on the fifth floor. And if you start having explosions in the building, you should start to worry about the pool leaking," Cochran added.

This group of reactors all share the elevated spent fuel pool design, meaning the entire group is vulnerable to the same design flaw.

Cochran said some other plant designs put the pool underground, which makes it less vulnerable to an explosion, though an earthquake could still cause structural damage and cause such a pool to leak, especially if the quake far surpassed the design specifications for the plant as occurred in this case.

Storage pools a known issue

US nuclear regulators have considered the dangers posed by spent fuel pool vulnerabilities in the past.

Following the 2001 terrorist attacks in the United States, the National Academy of Sciences undertook a study, "Safety and Security of Commercial Spent Nuclear Fuel Storage," which focused primarily on the risks associated with a terrorist attack on a spent fuel pool and consequent radiation release.

The report concluded that spent fuel pools are needed at all operating nuclear power plants to store recently used fuel as it cools and that a fire of the zirconium protective layer around the spent fuel rods "could result in the release of large amounts of radioactive materials."



The report suggested certain relatively simple measures like rearranging the spent fuel assemblies in pools to more evenly disperse heat and putting in place redundant cooling measures. It also made other recommendations that were redacted on security grounds.

NRDC's Cochran criticized the decision by the Nuclear Regulatory Commission (NRC) to classify so much of the report, "ostensibly so you wouldn't assist potential terrorists," because "as a consequence you deny the public the chance to decide whether they agree with that analysis."

One finding of the report, echoed by several nuclear experts in recent days, is that "dry cask storage," in which partially cooled spent fuel is stored in concrete and steel structures, generally underground, is inherently safer than storage in pools.

Cochran said dry cask storage becomes possible two to four years after the fuel is retired from use, when the temperature drops enough that with proper ventilation, the zirconium cladding will not melt. "It would be extremely hot both thermally and radioactively at that point, but it wouldn't be hot enough to melt the cladding," he said.

Because dry cask storage does not require active cooling, it is inherently safer than a system that relies on power-dependent water cooling systems that can fail, as has happened at the Daiichi plants.

#### US fleet

According to General Electric Co., 32 boiling water reactor (BWR) Mark 1 units like those in use at the Daiichi plants are in operation worldwide, and experts say there are 23 comparable plants in the United States.

"The BWR Mark 1 reactor is the industry's workhorse with a proven track record of safety and reliability for more than 40 years. ... There has never been a breach of a Mark 1 containment system," the company said yesterday.

But Cochran believes the elevated pools are just one design element of the Daiichi plant setup that clearly needs further review in the United States.

"I think there are a lot of problems with these BWRs and Mark 1 and 2 containments, and there's a lot of work to be done to repair the safety deficiencies in the US plants. Otherwise, they should be phased out," Cochran said.

"You don't design a reactor so that every time you get a partial-core melt you would blow the top off the reactor. There's obviously a design flaw in the hydrogen management. ... You don't have to be very smart to figure out that there was some failure in the design for managing that type of an event," Cochran said.

He said another clear design flaw lies with the regulatory requirements governing backup power for the reactors. It was an initial grid power outage to the plant from the earthquake, followed by failure of the backup diesel generators due to damage in the tsunami and depletion of four-hour backup batteries, that led to the cooling system failures in Fukushima.

#### 4 to 12 hours of battery backup

Indeed, many scientists and environmental groups are pointing to the unfolding events as a wake-up call for US regulators to go further in ensuring the country's 104 reactors have sufficient battery power to continue operating if power is lost and backup diesel generators fail.

The country's nuclear plants could lose independent off-site power sources and backup generators and slowly come to rely on batteries that only run for four to eight hours, said David Lochbaum, a nuclear engineer and director of the Union of Concerned Scientists' (UCS) nuclear safety program. Only a smaller group has batteries that can produce power for up to 10 hours, he said.

Lochbaum acknowledged that many plants are better prepared for disasters in the aftermath of the terrorist attacks of Sept. 11, 2001, both in terms of backup generation and personnel to fight fires, and "those might be sufficient to deal with what happened in Japan," he said.

Nuclear Energy Institute (NEI) Senior Vice President Tony Pietrangelo said today that nuclear reactors in the United States are in compliance with NRC's "station blackout rule," which requires nuclear facilities to develop plans and practices to continue operating when power is lost.

On a call with reporters today, Pietrangelo conceded that the loss of power factored into the situation at Japan's Fukushima Daiichi plant. Operators at the reactor lost power and three units "tripped" or shut down after the earthquake struck on March 11, at which time emergency diesel generators worked for about an hour until they were washed away by the tsunami and batteries were brought in.

But in the United States, some reactors -- Pietrangelo could not confirm how many -- install diesel generators underground for protection and, depending on the plant, have batteries that can last up to 12 hours. All US nuclear plants, he said, are designed to sustain the most severe earthquakes for the region within which the plant is located.

When asked how the industry would feel about reactors being required to have more backup battery power, Pietrangelo said, "That's the kind of review we do to apply the lessons learned going forward."



Environmental groups have raised concerns about the "standard blackout rule" since it was implemented in the 1980s, calling into question whether the agency confirmed that all US plants can cope with a total loss of power "at any time." Industry groups like NEI, on the other hand, submitted comments making clear that any requirements beyond the rule would prompt further formal rulemaking activities.

NRC conducted a study in 2003 that found all plants were complying with the rule, generally by adding diesel or gas turbine generators, and confirmed that all facilities reviewed had a "4- or 8-hour coping capability."

Lochbaum yesterday pointed to a handful of events in which nuclear power plants in the United States were knocked offline, generators failed and batteries were used as a last resort.

In 1998, a tornado struck the Davis-Besse nuclear power station, a pressurized water reactor in Ohio, and damaged the facility's access to external power. The plant was shut down and emergency diesel generators powered the safety system until external power could be restored, according to NRC.

In 1992, the Turkey Point nuclear reactor in Florida was damaged by Hurricane Andrew's winds of up to 145 miles per hour, causing a loss of power, according to NRC. In that situation, the backup diesel generators failed because of problems with moisture in the equipment, and remaining emergency diesel generators carried the load. The NRC report notes that the backup generators were crucial to pumping power into the facility.

"To say that this never happens" is wrong, said Jim Riccio, a nuclear policy analyst for Greenpeace. "There are examples ... even with a robust grid like ours, you're going to have problems."

## **NRC Tapping Tech For Better Analysis Of Nuclear Accidents (NETWORLD)**

By Jaikumar Vijayan

[Network World](#), March 16, 2011

Long before the nuclear disaster in Japan began unfolding this week, scientists in the US have been trying to gain a better and more realistic picture of precisely what would happen if a similar accident occurred in this country.

For the past few years, researchers from the Nuclear Regulatory Commission (NRC) have been engaged in a project called State of the Art Reactor Consequence Assessment (SOARCA), to better understand how a nuclear reactor would behave in a severe accident, as well as what sort of radioactive release it would cause.

Similar research on hypothetical accidents at nuclear power plants have been conducted by the NRC and international nuclear safety groups for the past 25 years.

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What's different with SOARCA, says the NRC, is that it uses modern computing resources and modeling software to generate more accurate and realistic accident simulations. It also examines extremely rare, "one-in-a-million"-type accidents that could have a significant impact.

Such modeling and analyses of hypothetical accidents is designed to help stakeholders develop better protections and responses to nuclear accidents.

SOARCA models also take into account some of the new accident mitigation technologies and strategies that are deployed in nuclear power plants these days. The models factor in updated emergency preparedness measures and plant improvements that were put in place after the 9/11 terrorist attacks.

The studies are receiving renewed attention in light of engineers in Japan currently trying to avert a full-scale meltdown of the country's Fukushima nuclear power plant.

The plant was damaged severely in last week's earthquake and subsequent tsunami. Concerns about the safety of the plant have been escalating sharply over the past few days.

Those concerns were further heightened today after a third explosion rocked the facility causing radiation levels to increase to potentially dangerous levels.

The NRC said on Monday that it has sent several nuclear experts to Tokyo to provide assistance to officials there.



Among other tasks, the team's mission is to better understand the potential impact of radioactive leaks on people and on the environment, the NRC said in a statement Monday.

As part of SOARCA, the NRC has run computer modeling and simulation tools to study at least two operating nuclear power plants in the U.S. over the last couple of years.

One of the plants that participated in the initial phase of the NRC's SOARCA project is the Peach Bottom Atomic Power Station in Pennsylvania. The plant features a boiling water reactor (BWR) similar to the most troubled reactors in Japan. The other plant is the Surry Power Station, a pressurized water reactor (PWR) in Virginia.

The commission did not respond to requests for comment on the status of its SOARCA project.

Publicly available information on the project states that the project's goal is to develop an enhanced understanding of the consequences of a nuclear power plant accident involving the release of radioactive material into the environment. SOARCA will give the public and decision makers the "latest basis" for assessing the consequences of severe accidents at nuclear power plants, the information notes.

## **A Japan-reactor Repeat In The United States Could Cost The Government Dearly (GOVEXEC/NATJ)**

By Jim Tankersley, National Journal

[Government Executive/National Journal](#), March 16, 2011

An American nuclear power-plant accident similar to the ongoing disaster in Japan would leave taxpayers on the hook for billions, and perhaps hundreds of billions, of dollars in health and economic damage claims, risk experts estimate.

Federal law puts most nuclear-accident liability on the shoulders of taxpayers, but regulators have not enforced safety standards vigorously enough to fully safeguard against those risks, economists Geoffrey Heal and Howard Kunreuther wrote in a 2009 paper that warned of excessive taxpayer exposure to the risks of nuclear catastrophe.

Heal, a professor at Columbia University, and Kunreuther, of the Risk Management and Decision Processes Center at the University of Pennsylvania's Wharton School of Business, acknowledge that the risks and costs of a nuclear accident in the United States are difficult to quantify. But they say that the upper-end damage estimates of a full core meltdown are almost "unimaginable."

The prospect of such an accident, while low, suddenly seems more imaginable in the wake of the simultaneous failures of three reactors at Japan's Fukushima Daiichi Nuclear Power Station, following the 8.9-scale earthquake and massive tsunami that struck the country on Friday.

Heal and Kunreuther sketch a deadly and expensive example of how bad a US nuclear accident might be: A meltdown at the Indian Point nuclear-power station 25 miles north of New York City, they write, could eventually kill some 64,000 people - damage that they calculate at \$384 billion - and inflict \$50 billion to \$100 billion in economic costs. Nightmare scenarios involving lost nuclear material that ends up in terrorists' hands, or the long-term evacuation of New York City, would dramatically increase the costs.

The Price-Anderson act limits private liability for those costs to \$375 million for an individual company, plus \$12.6 billion from an industry liability pool, leaving taxpayers on the hook for the rest. That transfer of liability creates conditions for moral hazard - an incentive for an electric utility, in this case, to take on too much risk because the utility would not bear the full costs of a catastrophic event.

The Nuclear Regulatory Commission is supposed to be taxpayers' guard against that risk. But, Heal and Kunreuther write, it's far from clear that regulators have done the job adequately: "There is empirical evidence that the NRC does not aggressively pursue and penalize mismanagement of nuclear-power stations, and that the federal authorities are not sensitive to the increase in potential costs associated with siting near densely populated areas."

In a phone interview on Monday, Heal gave the NRC a "5 out of 10" on a regulatory rating scale and raised concerns over whether the agency had adequately prepared for the possibility of a large American earthquake shaking a nuclear facility. In California, home to two working nuclear plants, Heal said that a massive radiation release would inflict damage "in the billions and billions of dollars."

US regulators must quickly learn the still-unfolding lessons from the Japanese plant failures, he said, including whether plant operators there took any safety shortcuts.

"The priority in this country now is to focus very heavily on reactors that are in a seismic zone," Heal said, adding, "The NRC is supposed to be our guarantee against moral hazard. But if the NRC isn't keeping its game up to scratch, the risk from moral hazard is tremendous."



## **Nuclear, Oil, Gas Or Coal? Pick Your Energy Poison (USAT)**

[USA Today](#), March 16, 2011

When officials in charge of a badly damaged nuclear power plant consider trying to cool hot fuel rods by spraying them with water from a helicopter, the situation is either out of control or frighteningly close. That's where matters stood late Tuesday at Japan's Fukushima Dai-ichi nuclear plant, as workers fought another fire and struggled to keep the plant's reactors from releasing catastrophic amounts of radiation.

The disaster that has unfolded at the plant since Friday's magnitude 9.0 earthquake and tsunami has to make even strong supporters of nuclear power, including us, wonder just how vulnerable US plants are, and whether building more makes sense.

No one knows how this will end, and the middle of a crisis is the worst time to make long-term policy. But Japan's nightmare has already been a sobering reminder that even a technology meticulously engineered to have backups of backups can be unraveled by an improbable chain of events.

In Japan, everyone anticipated earthquakes, and plants are designed to resist them. They also expected tsunamis and built sea walls to protect against them. But they did not anticipate an event so devastating that it would leave the plant without electric power for so long that its redundant systems would fail.

Are there similar risks for the 104 US nuclear reactors? Japan's experience has revealed one possible weakness at American facilities, where emergency batteries are typically designed to supply backup power for just four hours. At Fukushima, batteries were designed to provide power for eight hours, not nearly long enough to restore electricity to the reactors' cooling pumps because the room housing vital electric connections was flooded.

Then there's the question of whether US earthquake protection is adequate. At least eight reactors are in seismically active areas in Arizona, California and Washington. It's reassuring that California's Diablo Canyon plant rode right through a magnitude 6.5 quake in 2003, less so to know that the plant is designed to survive only a magnitude 7.5 quake.

The reality is, the United States doesn't have the option to walk away from nuclear power, which supplies almost 9% of the nation's energy and about 20% of its electricity. The industry has posted such a strong safety record in the 32 years since the accident at Pennsylvania's Three Mile Island that many environmentalists have embraced the idea of building new plants – which offer huge amounts of 24/7 power with virtually no carbon emissions.

Nuclear energy's drawbacks are glaring at the moment, but it's worth remembering that no major source of energy the United States is using comes without a heavy cost:

- +Oil provides the single largest share of American energy – more than a third. Last summer's BP well blowout and spill in the Gulf of Mexico were reminders of the environmental price the nation pays for the aggressive oil exploration necessary to keep domestic supplies from declining. Even so, the US imports more than half its oil, making it reliant on a volatile world market that enriches US adversaries such as Venezuela and Iran.

- +Natural gas provides about a quarter of US energy, and the good news is that supplies are enormous. The bad news is that drawing that gas from tight rock formations means using a controversial technique called "fracking" that fractures rock deep underground so the gas can flow. Studies have shown that fracking has contaminated drinking water supplies with carcinogens and radioactive elements.

- +Coal supplies about a fifth of US energy and almost half the nation's electricity. Again, the good news is that America's supplies are huge. But underground coal mining routinely injures and kills miners, surface mining scars vast tracts of land in Appalachia and the West, and coal is a major contributor to air pollution and greenhouse gas emissions.

Wind and solar power have fewer drawbacks, but their contributions to the nation's energy production are small – less than 1% combined. That will change, but getting to the point where solar or wind equal the output from oil, coal, natural gas or even nuclear power will probably take decades.

Until then, the best approach to energy disasters is the same one applied to air crashes: Study the causes carefully, learn from the mistakes, and adopt changes to make the systems as safe as humanly possible.

## **Assessing The Future Of Nuclear Power In The US (NPR)**

**Talk of the Nation**

[NPR](#), March 16, 2011

In Japan, workers are racing to prevent major meltdowns at a nuclear power plant in Fukushima. Many residents near the plant are reportedly fleeing the area. Japan's crisis may affect the renewed push for nuclear energy in the United States and other countries.

NEAL CONAN, host:

This is TALK OF THE NATION. I'm Neal Conan in Washington.



While millions in Japan spend another cold night without power, food or running water, many thousands are trying to evacuate the area around a nuclear power complex that's emitting radiation after a series of explosions and a fire.

Four of the six reactors at the Fukushima Daiichi complex are in some level of crisis. We'll get an update in just a moment.

Later in the program, how what's happened in Japan affects the debate on the future of nuclear power in this country and around the world. China plans to move ahead. Stress tests have been ordered on all plants in Europe. And Germany decided to shut down one aging reactor and put a decision to extend the life of 16 others on hold.

Given what's happened in Japan, have you changed your mind about nuclear power? Calls later. You can send us email now. The address is [talk@npr.org](mailto:talk@npr.org). But first, NPR science correspondent Jon Hamilton joins us here in Studio 3A.

Jon, nice to have you with us.

JON HAMILTON: Glad to be here.

CONAN: And we understand there was a spike in radiation emitted at the Fukushima plant earlier today, but that's since subsided.

HAMILTON: That is what we're hearing is there was a spike, and it was actually a fairly scary one. It went up to a level they referred to as 400 millisieverts, which is a lot of radiation. It's enough radiation that if it were to go on for several hours, and you were right there, you could become sick.

But I should say that the spike was just that. It was one point in time at one place. It has since gone down since then. And it was not sustained. So it suggests that whatever was causing that radiation to be released has been taken care of.

CONAN: And was that – could that have been the fire that was reported at one of the three plants that had been shut down before these – before the earthquake for maintenance?

HAMILTON: It certainly could be related to the fire. The fire we're talking about was in reactor number four at the Fukushima Daiichi plant, and that's, interestingly enough, a reactor that was not in operation. However, even the reactors that are not in operation, they have these pools where they store the spent fuel.

And it appears that what happened was that the cooling system that has to cool down this spent fuel because it still has a lot of heat to give off, that somehow failed. Perhaps the water level dropped and exposed the radioactive material to the atmosphere, which would account for – certainly for a radiation spike. And it also would've allowed the production of a huge amount of heat, which could have started the fire, and there you have it.

CONAN: And there you have it. So the other three plants, though, that were online and were reported in crisis, well, I guess ever since the earthquake and tsunami, what's the situation there?

HAMILTON: Well, what I'm hearing is that people are pretty reassured right now – and I should say right now – about numbers one and three. Number one reactor was the one that we first did so much reporting on because they were having terrible problems keeping the core cool enough, that it wasn't going to create terrible problems and have perhaps even a meltdown. Number three went through a similar thing.

Today, the focus has been on number two, where there was an explosion, maybe more than one explosion, but what happened was there had been explosions at two of the other reactors, but these were outside of the reactor's so-called containment vessel. It was a hydrogen explosion in the building, and it did a lot of damage to the building but not to the reactor and its containment structure itself.

This explosion in number two was in a part of the containment system, not the vessel per se, but in a part of the containment system, and the concern there is that an explosion there could possibly have opened up a hole where radioactive material could escape out into the environment.

CONAN: It could, might. How do we know for sure?

HAMILTON: We don't. And I should say with everything to do with the situation in Japan, the information has been really sparse. And you – when you read things from different sources, they all have different takes on exactly what has happened.

And the government officials seem to be doing updates, you know, more or less once a day, and that information seems to be pretty good, but it's not coming out very often.

CONAN: And so we've heard that, for example, United States Navy vessels that had been off the east coast of Japan were going to be moved to the west coast. The prevailing winds are blowing the material to the east, and this is seen as a way to get out of the path of any radiation that might escape. And is this a wise precaution at this point?

HAMILTON: It's hard to say. I don't know what the levels they're experiencing are. You would think that for a Navy vessel to decide to move, it would have taken a reading it considered disturbing.

But my understanding, you talk about information flow, my understanding is people have gotten that from, you know, the Facebook page of somebody on this ship.



So it does suggest that there are levels of concern that are miles from the plant. However, just to address something else that's come up, people have talked about higher radiation levels in Tokyo, say, which is 150-plus miles away. And yes, that's true but a tiny, tiny increase and nothing that you would think would cause any kind of health problem.

CONAN: The prevailing wind does blow from the east to the west so - excuse me, away from Japan, toward the Pacific. Does that represent any kind of a threat to anybody downwind?

HAMILTON: Well, if you had a major release of radiation - so far there have been releases - it appears most of the releases have been when they vent steam because pressure's building up in one of these vessels. That steam has some radioactive material in it. It's somewhat radioactive. And so you get a temporary spike with each of these releases.

We have not had the kind of sustained release or the event like in Chernobyl, where there was an enormous explosion that put a huge amount of radioactive material way up into the air, where the winds could carry it. We haven't - we have not seen that in Japan.

CONAN: And is there any fear that we could yet see something like that or a meltdown?

HAMILTON: The people I have talked to - meltdown is a real possibility. There's been talk from government officials already that they are - they suspect or maybe even presume that there's been what they call a partial meltdown in at least two of these reactors.

And these reactors, on the inside, there's a huge steel, stainless steel chamber, and you have these fuel rods that have uranium in this case in them. And when they - they don't have to all melt, right. You can have a little bit of them melt, and that can do bad things.

If they all melt, you can end up with the whole mess in a big puddle of radioactive glop on the floor of this thing, and that's not good at all. But that hasn't happened.

CONAN: And we have no fear that it will?

HAMILTON: It is - the people I have talked to say explosion not so likely. The things that led to the explosion in Chernobyl were...

CONAN: A different design of plant.

HAMILTON: A design that would never be built in the US or Japan. There was no containment structure at all. And also, that reactor was running out of control. The nuclear reaction was going full-tilt when it went. So the amount of heat that produced created a big explosion and a subsequent really intense fire, which is why all the problem.

Nobody seems to think that's a possibility. The type of hydrogen explosions we have, and even the fire they had, not in the same order of magnitude. However, a meltdown is something people do think might happen.

And in that case, what happens is that the core is - if the cooling is insufficient, if you can't keep water flowing around it, it gets hotter and hotter, and eventually not only does the steel start to melt but so do - so does the cladding around these fuel rods. The nuclear material itself will eventually melt.

And all this stuff ends up in this kind of molten stuff that follows gravity, and, you know, we all remember "The China Syndrome," right. Things can burn their way down. It could burn its way out of the core. It could burn its way - then it would be inside the containment vessel.

The worst-case scenario I heard described by anybody was that yes, it's possible that if that happened in the right circumstances, it could even burn its way out, you know, through the floor of the containment vessel.

That is still not like Chernobyl because that's going into the ground. It's causing problems with groundwater and plants and things like that. It's not putting it up in the air, where hundreds of thousands of people are going to be exposed.

CONAN: And we're - we actually know a fair amount about this particular design of reactor because it was designed by General Electric.

HAMILTON: Indeed it was. I believe it's known as the General Electric Mark 1 boiler.

CONAN: And these - nuclear power makes up about 25 percent of Japan's electrical-generating capacity.

HAMILTON: Twenty-five, 30 percent, I think in that range, yes.

CONAN: And these six plants comprise how much of that?

HAMILTON: My understanding is there are about 55 reactors all together. So you're talking about a relatively small - I mean, remember that we're talking about Fukushima One, Fukushima Daiichi, right, which is, right now, six different reactors with two more being built, right.

So only three of those were actually even running when the earthquake hit. The others were down for refurbishment or maintenance or something. So you're talking about losing three reactors. And, by the way, since they're, you know, pumping saltwater into these reactors, they probably are toast, right.

CONAN: They're not coming back.



HAMILTON: They are not coming back. So you're talking about three. It's significant, but it's not as if the majority of the nuclear power in Japan is about to disappear because of this incident.

CONAN: And there are all kinds of safeguards, given the possibilities of earthquakes in a place like Japan, that nuclear power plants are supposed to shut down automatically. And yes, they did that at Fukushima Daiichi, but other things subsequently went wrong. What's going on with the other nuclear power plants? Are they all offline, or are they back online and producing power?

HAMILTON: I don't have a lot of details there. My understanding is that they're trying right now to bring - they need this power, right. You have terrible power problems in Tokyo. We're talking about rolling blackouts and stuff like this.

So my understanding is that the nation is trying to bring the ones that they think are safe, the ones that were not damaged by the tsunami or something, bring those back online. I do not know how many are online at the moment.

CONAN: And getting back to the area right around the nuclear power plants at Fukushima, the people have been told, well, there's a big evacuation, I guess, within what...

HAMILTON: I think we're...

CONAN: Eleven kilometers, and then...

HAMILTON: Twelve miles, 20 kilometers, and then there is an area of 30 kilometers, where they're asking people to stay inside to - in the event that there's some radiation coming down. They can be protected.

CONAN: But there have to be some people still at the plant fighting to contain this situation. What kind of dangers are they in?

HAMILTON: It's likely that they're in a lot of danger. You know, this is really two stories. On the one hand, the danger to the public at this point, if you're in Tokyo or miles from this plant, the danger to you is really at this point not at all great.

I mean, that could change. But if - for these workers who are at the plant, some of them apparently have already gotten radiation sickness. Some of them may be gravely ill as a result of this.

The radiation levels right around the plant have been high enough to be truly frightening, and in fact, they have removed -- I understand there were about 800 workers. They're now down to a skeleton crew of about 50, and the reason is this spike in radiation you saw, which could, in fact, be really dangerous to these workers.

CONAN: NPR science desk correspondent Jon Hamilton, with us here in Studio 3A. Thanks very much for your time today.

HAMILTON: My pleasure.

CONAN: We're going to continue to watch the situation at those nuclear plants and the rescue operations in the northern part of Japan. Stay with NPR News for the latest.

Up next, the ongoing crisis in Japan has reshaped the debate over nuclear power in this country. We'll talk about what that might mean for the future of nuclear energy. Stay with us. I'm Neal Conan. It's the TALK OF THE NATION from NPR News.

(Soundbite of music)

CONAN: This is TALK OF THE NATION. I'm Neal Conan in Washington.

It's now very early in the morning in Japan, a fifth day of freezing temperatures, no power, little food or clean water for millions of Japanese. Dangerous levels of radiation leaked from a damaged nuclear power plant in recent hours. Four reactors are now in crisis after a number of explosions and a fire at the Fukushima power plant in the northeastern part of the country.

The government imposed a no-fly zone over that area, and the US Navy issued anti-radiation pills to some American sailors who may have been exposed to the radiation. We'll continue to monitor the news out of Japan and bring you updates as they come in.

In the meantime, the partial meltdowns in a number of reactors in Japan have reignited debate over the future of nuclear power in this and other countries.

Given what's happened in Japan, have you changed your mind? Give us a call, 800-989-8255. Email us, [talk@npr.org](mailto:talk@npr.org).

The Obama administration thus far is standing firm in its support of nuclear power. The president's latest budget, released last month, calls for \$36 billion for nuclear power plant construction.

In a news conference on Friday after the earthquake, President Obama said that by 2035 the United States would get 80 percent of its electricity from clean energy, wind and solar and home-grown biofuels, along with natural gas, clean coal and nuclear power.

Yesterday administration officials in a briefing at the White House dismissed calls for a freeze on nuclear power.

Joining us now is Rebecca Smith, who covers nuclear energy for the Wall Street Journal. She's at a studio in San Francisco. Nice to have you back on TALK OF THE NATION with us.

Ms. REBECCA SMITH (Wall Street Journal): Thank you, Neal.



CONAN: And we spoke to you last March. At that point, President Obama had recently announced that multi-billion-dollar loan guarantee for construction of two new reactors in Georgia. How are these events in Japan changing the debate?

Ms. SMITH: Well, I think it's a little early to say. But if – there are almost two dozen reactors operating in the US right now that are of similar vintage and design as the ones that have failed in Japan. So there's doubtless going to be more scrutiny on our older our oldest reactors, and also on the re-licensing of those reactors, which has been going on for some time now.

Of those two dozen reactors, I believe 18 have received 20-year license extensions. So there may be more focus on that process.

CONAN: Interesting, license extensions. That was the issue in Germany, which had decided to extend the life of its 17 reactors, seven of them older power generators. And, well, suddenly that decision is on hold. One of those oldest ones is now going to be put, going to be shut down.

Ms. SMITH: Right, and you know, there are a number of issues with these older reactors. And I'd like to clarify a couple things. It was said earlier that these were Mark One reactors. That's not quite right.

They're General Electric Model Three and Four boiling-water reactors, built between the late 1960s and early 1970s. Mark One refers to the containment structure, which is supposed to provide a protective barrier and keep radiation from being released.

The problem in this case is that you had such massive failures inside the reactor core that they have had to release steam to relieve pressure from that reactor. It's gone through the containment building, which normally would be kept tight, and it's been released to the atmosphere.

So one of the things that's going to have to be looked at is this Mark One containment, which is one of the weakest ones that's still in existence anywhere, quite obviously because it's the oldest.

I mean, this was an early design. The later versions were much more robust and much bigger. So there's going to have to be a new look taken at that.

CONAN: Are there similar models here in the United States?

Ms. SMITH: As I said, there are around two dozen, and it includes – these are plants that are among our oldest, and they're operated by the biggest names in the business. I'm talking Exelon, Entergy, Constellation, Southern Company. I can't remember if I said Entergy, but these are the large operators, and they're in roughly a dozen states. So there's going to be a lot of public worry about these units, I suspect.

CONAN: Yesterday Representative Ed Markey, a Massachusetts Democrat, a ranking member in the House Natural Resources Committee, called for a moratorium on permits for US reactors.

Senator Joe Lieberman, who's been an advocate of nuclear power, called for a temporary halt to licensing of new plants.

Ms. SMITH: Well, one of the ironies of this, of course, is that we've had a problem, is with these little old units that have failed in Japan. What's being licensed today is completely different from these old plants. I mean we have half a century of nuclear experience now.

And the new units have many more safety systems in them. They call them passive systems. And the idea is that you use natural forces like the flow of water from gravity to keep a reactor cool. So I think the new designs are inherently safer, but there's now the possibility that they may never get built in the US because of fears from these old ones.

CONAN: And the fears of what are obviously very rare but very vivid events. I think anybody alive remembers Three Mile Island. More people certainly remember Chernobyl, and these events in Japan. But those are very, very rare.

Ms. SMITH: They are very rare, and of course the comparisons to Chernobyl, which was a graphite plant, as was pointed out earlier, a sort that would never have been built in any other country, really, but Russia, that explosion couldn't happen here.

Nevertheless, we fear radiation. I mean, at its simplest one could say that using radiation as a means of creating steam to make electricity is a high-risk operation. And we have believed until now that we had enough redundant safety systems in these nuclear plants to provide and assure public safety.

This accident now, where for the first time we've had multiple reactors fail, really calls into question the premise of redundancy.

CONAN: Let's see if we can get some callers in on the conversation. Our phone number, 800-989-8255. Email us, talk@npr.org. Given what's happened in Japan, have you changed your mind on nuclear power? And we'll start with Darius(ph), Darius with us from Tampa.

DARIUS (Caller): Hi, thanks for taking my call. Even though the accident happened, I'm totally for nuclear power. You know, our sun is a huge nuclear reactor. We wouldn't be alive without it. So yeah, it's dangerous, but you know, life is filled with risk.

CONAN: Life is filled with risk. So if they wanted to build one in Tampa, you'd be fine with that?



DARIUS: I'd be fine with it, yes.

CONAN: All right, Darius. Thanks very much for the call, appreciate it. And the so-called NIMBY problem, Rebecca Smith, that's an eternal one in the construction of nuclear power plants.

Ms. SMITH: Well, it certainly is, and you know, the licensing process is a long and thorough one. But we're going to have to go back now, I think, and look at what the seismic standards have been and certainly what the assumptions have been about tsunami.

In California we have two power plants on fault lines on the Pacific Ocean. I have personally been to the San Onofre plant, and I can tell you there's a very small seawall that separates that power plant and the ocean.

You know, there are many, many things that are going to be looked at, but the one thing you can be assured of is that the nuclear industry is thorough, and they will go through this with second-by-second analysis of what went wrong.

CONAN: The small seawall in front of that plant, obviously not much of a protection in case of a major tsunami.

Ms. SMITH: I wouldn't think so.

CONAN: Let's see if we can get another caller in on the line. Let's go to -this is Patrick, Patrick with us from Corvallis in Oregon.

PATRICK (Caller): Hello, Neal. Thank you very much for taking my call.

CONAN: Sure.

PATRICK: I'm actually a nuclear engineering student at Oregon State University. The point I wanted to make is that we really can't design any major industrial facility that can withstand natural disasters of this magnitude.

Whether this was a chemical plant or an oil refinery or a natural gas plant, it would've been very difficult to build something that would not have caused a huge issue after this disaster, whether it was a fire, a release of chemicals, or anything else, really.

CONAN: So the scale of the disaster is what concerns you?

PATRICK: Yeah, it concerns me that we - any large industrial facility would have been - would have caused a large environmental catastrophe at this point, whether it was a release of radiation or an uncovered core or whether it was the release of a large amount of carcinogens.

CONAN: It's interesting, Rebecca Smith. We heard the chairman of the NRC say American plants are designed to withstand significant events, significant events, including tornadoes and earthquakes and that sort of thing - 9.0, that significant?

Ms. SMITH: Well, it's massive, but - and I don't exactly agree with the caller. I would say we can design around any threat. The problem with the power industry is these are privately owned power plants. That is, they're owned by utilities.

And they have to be able to pass a cost-benefit analysis. No one's going to build a nuclear plant if they have to build it for a 9.0 or a 10.0 Richter earthquake. It simply would become astronomically expensive.

So it may be economics that is the greatest threat right now, due to engineering, increased engineering standards, that is the threat to the industry.

I mean, you have to be able to make power and sell it at an affordable price.

CONAN: Patrick, thanks very much.

PATRICK: Yeah, thank you very much.

CONAN: Here's an email from Kevin in Baltimore: With all of the safe, clean options for power today, why take the chance with nuclear? What's the worst that could happen if a windmill or a solar panel fails?

Also, why provide targets - nuclear power plants - for terrorists? Think about it for a minute. And do you want to store the nuclear waste in your backyard? Germany supposedly gets 15 to 20 percent of their energy from solar.

And there's a couple of questions in there. Is there enough wind or solar -potential for wind and solar power to make up what nuclear provides and more?

Ms. SMITH: You know, well, California has one of the loftiest goals. It wants to get 30 percent of its electricity from renewable sources. And you know, it's making headway in that direction.

But again, the point needs to be made that nuclear energy has to compete with these other sources of power, or it's not going to stay in the mix. And right now, we have extraordinarily cheap natural gas. It's much easier to throw up a natural gas plant and burn cheap gas than it is to build a nuclear plant, even before we've gone through what will now be a new even greater analysis of what the construction standards have to be.

CONAN: Well, lately, we've been hearing a lot of the dangers of so-called fracking, the hydraulic fracturing, which is involved in extracting that natural gas. Obviously, coal plants, well, they generate a lot of waste products, and oil and gas eliminates - put some carbon in the atmosphere, too. Nuclear power plant accidents are very rare. Are the dangers from all of these other sources, well, they're dispersed over a wide area, but they're significant, too?



Ms. SMITH: I don't think anything is as significant as a nuclear accident, though. I mean, that's really off the scales, if you get a major radioactive release. It is true that every source of energy has its cost and has its environmental damage that is created, but we're talking a whole different level when we talk radioactivity.

I mean, the half-life on these isotopes is enormous, and look at Chernobyl, there's still a massive dead zone around that plant. Even though we're not talking that kind of accident in Japan at this point and probably couldn't be because the fuel is different, there's still a threat to society that is different with nuclear energy than any other form of energy.

CONAN: Let's go to Alex. Alex with us from Baton Rouge.

ALEX (Caller): Hi, Neal. How are you?

CONAN: Very well, thanks.

ALEX: Good. I'm in the US Navy. I've worked on a submarine with these reactors, and I got to say if you look at the Navy's history, we've never had an incident. I think the entire thing is about training and preparation for these things.

Of course, the catastrophe of this magnitude maybe it wasn't foreseen, maybe it wasn't prevented - preventable, but in a normal environment, nuclear energy is one of the safest ways we can go, as well as the most affordable, if we look at it in the long run. I totally support it, and I would have a reactor in my backyard any day of the week.

CONAN: Those are pressurized water reactors in nuclear submarines. And is Alex right, that there's never been an accident with one of those?

Ms. SMITH: Oh, I think the US Navy has a very exemplary record in terms of reactor safety. These are tiny units compared with what we're talking about with commercial reactors. As you pointed out, they're pressurized water reactors, not boiling water, so there's some differences in design. One other thing has been - I've been told many times, is that the Navy gold-plates its reactors, and that the commercial reactors are not built with specifications as high as what the US Navy demands.

CONAN: Alex, thanks very much for the call. Appreciate it.

ALEX: Thank you.

CONAN: We're talking about the renewed debate over nuclear power given the events in Japan. You're listening to TALK OF THE NATION from NPR News.

Let's go next to Dave, and Dave is with us from Buffalo.

DAVE (Caller): Hello, folks. Very important subject. Can you hear me?

CONAN: Yes. You're on the air. Go ahead.

DAVE: Okay. I'm an engineer, and I've heard that nuclear power plants are not efficient. They create a lot of excess heat that are - dispersed into the environment, either into the air, through these large cooling towers or into the water. So our main concern here is global warming. So if the CO<sub>2</sub> through sunlight or if it's nuclear power, you're putting a lot of heat into the atmosphere or into the water. So I wondered about that. That's all.

CONAN: Is the extent of the excess heat developed by nuclear power plants a significant contributor towards global warming?

DAVE: Yes. Compared to other plants, which aren't so - are more efficient.

CONAN: All right. What do you think, Rebecca Smith?

Ms. SMITH: I think we're talking apples and oranges. The problem - the concern with global warming is the release of carbon dioxide, okay? That's a byproduct of burning a fossil fuel like coal or natural gas. A nuclear plant, because it's using fissionable material, does not produce CO<sub>2</sub>.

DAVE: Right.

Ms. SMITH: It's not burning a fossil fuel. So the heat it produces is thermal heat...

DAVE: Right.

Ms. SMITH: ...and that is passed along either into the air or usually into a body of water nearby in the form of hot water.

DAVE: Right.

Ms. SMITH: So it's a completely different thing. I don't think - I mean, the - one of the advantages of nuclear energy is that it does not produce large amounts of carbon dioxide.

DAVE: But it produces a large amount of heat...

Ms. SMITH: So it should reduce the risk...

DAVE: ...so that's the concern I have.

Ms. SMITH: It's - yeah. It's thermal heat, but, like I say, it's a different - it's not heating up the atmosphere of the Earth. It's heating up bodies of water nearby, and normally, you'd - I mean, this is why they're controlled - this is - excuse me, this is why we build plants on lakes and oceans. It's because they use that water for cooling purposes.

DAVE: Right. Well, that only shows heat, so that's my concern.



CONAN: All right. I think it's what she's saying is insignificant in terms of global warming. So thanks very much for the call, Dave.

DAVE: You're welcome.

CONAN: Here's an email from Tate, who writes: I understand the discussion about safety and preparedness of nuclear reactors is important. I wonder if a little perspective is missing. Reactors should be prepared for earthquakes, but when the force of the quake pushes an entire country 10 feet to the left and wipes away entire towns with tsunamis, I feel like we're blaming dinosaurs for not expecting the meteor. In other words, are we talking about events that are so rare that, really, we can't design or shouldn't bother to design for them?

Ms. SMITH: I think -- I mean, to me, it's back to the cost benefit. You can design for anything, but do you want to pay for it? And at some point, the cost becomes so prohibitive that a person would not build a nuclear plant. You'd build something else, or you would try to find ways to make society more energy efficient so that we don't need as much energy to begin with.

CONAN: When is the next decision in this country, on the future of nuclear power? Are those plants in Georgia going to go ahead?

Ms. SMITH: Plants Vogtle? Those are the ones you're referring to. They're preparing the site, right now, for construction. They're -- in other words, they're moving tons and tons of dirt around and getting things ready. They hope to have a license to begin actual construction by the end of this year. It would take three to five years to build new reactors there. Things are still going forward.

And, again, the design that they're building there is called a Westinghouse AP1000. It is a passive design. It's light years different from the ones that are failing in Japan right now. They have federal loan guarantees. I don't know of anything right now that would obstruct that.

Southern is one of the better nuclear operators, globally. And I'm sure they and everyone else will be trying to learn as much as they can about what happened in Japan. They do have, by the way, a couple of these little units that are like the ones in Japan. They're probably much more worried about those right now than they would be about the new Vogtle units that are planned.

CONAN: Rebecca Smith, thanks very much for your time.

Ms. SMITH: Thank you.

CONAN: Rebecca Smith covers nuclear energy for The Wall Street Journal and joined us from a studio in San Francisco.

Japanese officials continue to pump seawater into nuclear reactors at the Fukushima Daiichi power plant. The government has told people to remain calm and ordered more than 100,000 residents near the plant to seal themselves indoors as radiation levels spiked and then subsided.

We'll continue to monitor events in Japan, and when we come back, two views on the future of nuclear energy in this country. Stay with us. I'm Neal Conan. It's the TALK OF THE NATION from NPR News.

Right now, we're talking about the renewed debate over nuclear power given what's happened in Japan. Have you changed your mind? Give us a call. 800-989-8255. Email us, [talk@npr.org](mailto:talk@npr.org).

In a moment, Jim Riccio, the nuclear policy analyst for Greenpeace USA. But we begin with Gwyneth Cravens, once an opponent of nuclear energy in the 1980s. She petitioned to shut down the Shoreham plant on Long Island in New York. Then, she changed sides.

In 2008, after years of research, she wrote a book called "Power To Save The World: The Truth About Nuclear Energy." And Gwyneth Cravens joins us now from member station KAZU in Seaside, California.

And it's nice to have you with us today.

Ms. GWYNETH CRAVENS (Author, "Power To Save The World: The Truth About Nuclear Energy"): Thanks for having me on.

CONAN: And what changed your mind?

Ms. CRAVENS: Well, a whole lot of little things, really, that -- mainly, I thought I knew something about nuclear power and had learned about it in high school and so on, grew up in Albuquerque, which is a -- New Mexico is like a pro -- you know, not a sort of nuclear bomb place.

But in a chance conversation with a scientist friend, I didn't know what he did, actually at - he worked at Sandia National Labs. And I made some remark about nuclear power, and he just gently informed me that I was wrong. And thus began - that's the way a long dialogue began. And I learned many surprising things, which I did not believe, so I would go home and - you know, I'd visit Albuquerque and talk to him, then I go back home to my place in Long Island and Manhattan and research.

And I would find that he - you know what? He was right. That there are certain laws of physics that I didn't know about and so on. And so, over time, I changed my mind, and one of the big mind changers, for me, as it was for Stewart Brand, is



catastrophic global warming and ocean acidification caused by burning hydrocarbons. We have to stop doing that, and the only large-scale way to replace those hydrocarbons is nuclear power...

CONAN: And...

Ms. CRAVENS: ...because it supplies base load.

CONAN: And I wonder, is what's happening now in Japan, is that making you rethink?

Ms. CRAVENS: No. The – it's important to know that the reactors function correctly. They were designed to withstand an earthquake, and they did. They automatically shut down, which all of our American reactors are programmed to do also. As soon as the first jolt appeared, they shut down. The control rods were inserted into the core and stopped the chain reaction.

So what we're dealing with now - or what they're dealing with, rather, is decay heat that's left over from the chain reaction.

The tsunami was the problem. The earthquake would not have caused the problems they're dealing with now. But their backup systems of electricity failed, and so they couldn't pump water into the reactor and so on. So it was a problem of the tsunami, not the design of the reactors.

Since – but, as Rebecca Smith points out, since those reactors were built, there are a lot of new features in the reactors we have in the United States. For example, gravity-feed water tanks that don't require electricity. You can – if you don't have electricity and your backup systems fail, you can turn a valve and keep the reactor and the spent fuel...

CONAN: Cool.

Ms. CRAVENS: ...underwater – cool, yeah.

CONAN: Okay. Well, let's turn to another voice. Jim Riccio, a nuclear policy analyst for Greenpeace USA with us here in Studio 3-A.

Nice to have you with us today.

Mr. JIM RICCIO (Nuclear Policy Analyst, Greenpeace USA): Thank you. It's my pleasure.

CONAN: And President Obama and many others say just what we heard from Gwyneth Cravens, we need to worry about global warming generated by carbon-emitting plants. Nuclear energy is clean, and it's safe.

Mr. RICCIO: Well, I think what's going on in Japan right now proves that it's not safe. And just because radiation is invisible, it doesn't mean it's clean. The people in Japan aren't going to see the radiation that may affect them, but they're still at risk from it.

President Obama did say yesterday that, you know, the events of the day weren't going to change his mind. We would hope that once the full impact of this tragedy is in full view, that he will reconsider.

It's not just groups like Greenpeace that are opposed to building new reactors and basically building them on the backs of the American taxpayer. Just last week, you had the head of Exelon, the largest nuclear fleet in the nation, was speaking to the American Enterprise Institute and said he doesn't believe nuclear loan guarantees are good, either. Even groups that are pro-nuclear, like Heritage Foundation, are saying, you know, we're pro-nuclear, but we're anti-nuclear loans because we don't want...

CONAN: Well, that's a small element of it. We were talking about the safety here.

Mr. RICCIO: Right. Indeed. And the fact is, you couldn't design a reactor that could withstand...

CONAN: I want you to stay small element. It's another element of it. But...

Mr. RICCIO: Right. You couldn't withstand - no reactors could withstand the tragedy that we just experienced in Japan. And our concerns right now are with the people of Japan. And, you know, we hope that their tragedy is not exacerbated now by pouring radioactivity over the top of them.

From what I've known just recently, you've had at least two partial core meltdowns. You thoroughly uncovered the core in the unit two reactor. And the spent fuel pool in the unit four reactor was burning this morning, and now is boiling. While, you know, the meltdown – the partial meltdowns are of a concern, you have 20 years worth of nuclear waste sitting in that spent fuel pool, that if it catch – if the pool is drained, that fuel will catch fire and be spewed out even more. So, you know, we're nowhere near the end of this disaster.

CONAN: And we - the radiation levels did, subsequently, go back down in Japan. So then...

Mr. RICCIO: Well, when you're blown the doors of the side of the reactor building, yeah, the radiation levels would tend to drop because they're being dispersed by the wind. I'm told that they're picking up radiation as far as 100 kilometers, by some of our ships at sea. We have a major nuclear event going on in Japan, and it's far too early to claim that things are under control.

CONAN: Well, again, these are older designs. The newer designs being proposed are much safer.

Mr. RICCIO: You don't know that. These were claimed to be the same - actually, the AP1000 that you were talking about building down in Vogtle, there are concerns right now about how well the containment will work. And there are petitions before the government about just that. The fact is that, you know, nuclear power is an inherently dangerous technology. And when things go bad, they tend to go very bad.

CONAN: And let me turn back to Gwyneth Cravens on exactly that point. When things go bad, it's very rare. But when things go bad, well, you have spectacular and drastic and tragic accidents.

Ms. CRAVENS: Well, there was a big accident at Chernobyl, which cannot be compared to what's going on in Japan. It was - the Chernobyl reactor had no containment. The death toll from that so far is 60 people. There's an estimate - they estimate that about 4,000 people might develop thyroid cancer from exposure to radioactive iodine. It was a very bad accident.

But I would just like to remind people that over 10,000 people a year die in the United States alone from fine particulates from coal-fired plants, which, incidentally, spew out more - it's a low-dose radioactive material, but burning coal concentrates uranium and radon - radium, and so on. And so in the coal ash, the waste which lies around in unlined pits, there's enough in the coal ash of one big coal-fired plant to make about six atomic bombs, uranium 235.

So the - and the stuff coming out of the stacks looks - you know, you don't see the soot anymore so much, but you see - or you don't - what you don't see are these invisible gases, sulfur and nitrogen gases which turn into fine particulates when they're combined with water vapor and get into the airways of our lungs and kill people with lung cancer and heart disease.

So this is an ongoing catastrophe, along with ocean acidification. As the ocean takes up more carbon dioxide, the water becomes more acidic. This is beginning to affect shelled organisms like corals. They can't make the calcium carbonate shells in the acidic waters. And so - and about three million people a year die from fossil fuel combustion pollution worldwide.

We have to think about how to provide base-load electricity - that is 24/7, around-the-clock electricity. We are witnessing in Japan what happens when you don't have electricity and how terrible that is for people from the health point of view alone.

And without - and nuclear power is the largest-scale way to provide nonpolluting electricity. This - I think Mr. Riccio is a little off the scale here with his claims about radiation. You have to ask how much radiation, what are the exposures and what is that compared to natural background radiation?

CONAN: And Jim Riccio, let's go back to the essence of what her argument is there, is the best of the bad lot. Yes, it's risky, but maybe less risky than known risks of coal-fired plants.

Mr. RICCIO: Well, in fact, we actually have to go back and correct something Ms. Cravens just said. She claimed that Chernobyl didn't have a containment. In fact, it had a pressure-suppression containment system that is the same conceptual design as what is in the GE Mark 1 reactors that are now basically experiencing hydrogen explosions in Japan. We have the same containment on 30-something reactors here in the States. And those reactors...

CONAN: But - so to other point. What...

Ms. CRAVENS: This is not the case.

CONAN: And there's going to be a dispute about that. Let's agree to disagree. Moving on to the problems presented - the real problems presented by coal and oil and natural gas.

Mr. RICCIO: Indeed. And actually, we're right now fighting coal plants, as well. But, you know, the reality is you don't need to go base load. When you have the head of the Federal Electricity Regulatory Commission, Wellinghoff, saying that you don't need any more nuclear or coal plants, it's not just Greenpeace that thinks that they're an anachronism.

CONAN: And what would they build instead?

Mr. RICCIO: Right now, we've put in a lot more wind and solar power - actually, a lot more wind than we've ever put into new nuclear in the last several years. Our biggest bang for our buck, especially in addressing global warming, is with energy efficiency. And actually, natural gas - if you're replacing coal plants with natural gas-fired turbines, you also get a substantial savings. That is in Pacala and Socolow's wedges articles from Princeton.

CONAN: And there's also problems presented by fracking, which is how you get the natural gas.

Mr. RICCIO: No, not all of natural gas, but some natural gas.

CONAN: But not all - but significant amounts.

Mr. RICCIO: Indeed.

CONAN: We're talking about the new debate over nuclear power after the events in Japan. You're listening to TALK OF THE NATION, from NPR News.

And Gwyneth Cravens, one argument that's particularly difficult to respond to is: What do you do with the nuclear waste?

Ms. CRAVENS: Well, keep in mind that all of the nuclear waste, spent nuclear fuel, in the United States - and it shouldn't be called spent fuel because it retains about 98 percent of its energy after one trip through the reactor - the volume is so small it could all fit in one Best Buy or one Wal-Mart. And that's from 40, 50 years of pouring out trillions of kilowatt hours. So keep that in mind. So the volume is small.

When you recycle it, as they do in France, the volume becomes tiny. And you immobilize the residue in glass and you put it in a deep geologic repository, and it's not going anywhere. And it's actually safer than some of the waste products of coal, which



never decay. From the - we discard 179 million tons a year of batteries which contain toxic heavy metals which never decay, and those are just put in landfills, mostly.

So the important thing about nuclear power is it always isolates and shields its waste. It's very well known how to protect the public from it. And yes, things can be done much better than in Japan. Things could've been planned better. But like any technology -- I mean, people die from wind turbine blades that go flying. So there are -- I want to point out that worldwide, per terawatt hour, nuclear power is safer than any other large-scale power source and actually safer than wind if you look at terawatt hour harm that has been, you know, per terawatt hour that's been done. This is according to a Europe -- the European Union's interneer study.

CONAN: Jim Riccio, is waste still a significant problem?

Mr. RICCIO: It certainly is. And right now, we're concerned about the waste pools in the Japanese reactors, because this morning, you had water drop below the top of the fuel. The fuel caught fire. It apparently refueled the pool...

Ms. CRAVENS: It's an oil fire.

Mr. RICCIO: And now they're burning. Or now -- sorry, it's now boiling.

Ms. CRAVENS: It's an oil fire.

Mr. RICCIO: So basically, the fear is that should that water boil off - and you have no way to cool - right now, they're trying to pour water with helicopters on top of that pool, not exactly an ideal situation. The concern is you have 20 years worth of waste in those pools, sitting three stories in the air. And should that water boil off, there's a chance that that fuel will catch fire and spew the radiation over a much larger area, more like Chernobyl because the fire will help propel the radiation similar to how the radiation was propelled out by the graphite fire at Chernobyl.

So you'll get a larger spread of radiation and from the three - the two partial meltdowns and the possible full core meltdown at units one, three and two.

CONAN: Okay. And if there was one event you were going to look toward in this country in terms of the future of nuclear power, Jim Riccio, what would it be?

Mr. RICCIO: Well, obviously, here in this country, we've melted down Three Mile Island several years ago, and that was a half-core meltdown. Don't think of it like pie. Think of it like a two-layer cake. They melted the entire top layer with the rest.

CONAN: Some time ago. Yes.

Mr. RICCIO: So, obviously, you know, that is a cautionary tale here in the States. Right now, we're relicensing 40-year-old reactors and pretending they can last forever. We still have the same, exact designs here as they have in Japan. Our waste is sitting three stories in the air. And a lot of these reactors are leaking radiation into groundwater as we speak. So, you know, there are enough examples here in the States that should be cautionary tales, and Japan should be an awful reminder of the downside, as well.

CONAN: Gwyneth Cravens, the final word. What do you look forward to in terms of a decision, in terms of national policy on the future of nuclear power?

Ms. CRAVENS: Well, I'm with President Obama and with Al Gore, who recently persuaded Al Franken to help lift the moratorium against nuclear plants in Minnesota. I think that we've got to have more nuclear power. It's much better. The technology is much better and the new wave of reactors that's coming online is going to be more improved, like any technology -- as time goes by, things improve. And we need nuclear power if we're going to get off fossil fuels. That's all there is to it.

CONAN: Gwyneth Cravens, thanks very much for your time today.

Ms. CRAVENS: My pleasure.

CONAN: Gwyneth Cravens is the author of "Power to Save the World: The Truth About Nuclear Energy." And she joined us from member station KAZU in Seaside, California.

Jim Riccio, appreciate your time today, too.

Mr. RICCIO: Thank you. My pleasure.

CONAN: Jim Riccio, a nuclear policy analyst for Greenpeace USA, with us here in Studio 3A.

I'm Neal Conan. You're listening to TALK OF THE NATION, which is coming to you from NPR News.

## **Duke, Progress Energy Stand By Plans To Expand Nuclear Power :: WRAL.com (WRAL)**

[WRAL-TV Raleigh, NC](#), March 16, 2011

Raleigh, N.C. — Despite a nuclear crisis looming in Japan, officials with North Carolina's two largest utilities said they remain focused on bringing new nuclear plants to the state.

Duke officials appeared before the North Carolina Utilities Commission on Tuesday requesting approval to spend \$459 million in development costs for a two-unit nuclear plant near Gaffney, S.C.

Duke is awaiting federal approval to build the \$11 billion plant. The request on Tuesday would cover development expenses for the plant until 2013.

"Our commitment hasn't faltered," Duke Energy President and CEO Jim Rogers said.

The company has already spent \$170 million on the plant, which they hope to make operational by 2020.

Progress Energy, which is in the midst of a merger with Duke, has plans to build two reactors at the Shearon Harris nuclear site in Wake County.

Both companies admit that they can't predict if fears over Japan's problems will affect their expansion plans.

On Tuesday, Japan's Fukushima Dai-ichi nuclear power plant emitted a burst of radiation, following an explosion and fire. Days earlier the plant was damaged by a deadly tsunami and earthquake.

Officials have been struggling to address the failure of safety systems at several of the plant's reactors since Friday's twin disasters.

"Common sense tells me that the accident is going to force some rethinking of the role of nuclear. How much rethinking is not clear," Rogers said.

Rogers stressed that in the United States 70 percent of carbon-free electricity comes from nuclear power.

Progress Energy spokesman Mike Hughes agreed that nuclear power is important now and in the future.

The North Carolina Utilities Commission has six months to decide on Duke's request. South Carolina regulators will take a similar look at the project within months.

The company is not legally required to seek the commission's approval to spend the money on the plant. If the commission does agree it is prudent for Duke to move forward with its plans that could put the company in a better position to get the commission's approval for a rate increase later.

Duke said it won't proceed with the project unless North Carolina changes state law so that it can start charging consumers before the nuclear plant is completed. Legislation hasn't yet been introduced in the legislature.

During Tuesday's meeting, some citizens feared the cost of the plant would be passed on to customers in the form of rate increases.

"We certainly don't need to make rate-payers pay upfront for expensive nuclear plants that the maker will not finance," Charlotte resident Beth Henry said.

Duke operates two nuclear units at McGuire Nuclear Station in Mecklenburg County. It has three units at Oconee Nuclear Station in Oconee County, S.C., and two at Catawba Nuclear Station in York County, S.C.

Oconee began operation in 1973 and at full capacity, its three units produce over 2,500 megawatts.

McGuire and Catawba nuclear stations each have two nuclear units with a total generating capacity of more than 2,200 megawatts.

Duke's nuclear fleet provides electricity to about half of its customers in the Carolinas, company officials said.

Progress Energy operates two nuclear plants in North Carolina – Brunswick in Southport and Shearon Harris. It also operates two plants in South Carolina – Crystal River and Robinson.

North Carolina's nuclear plants

[View NC Nuclear Plants in a larger map](#)

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## **Japan Crisis Delays N.C. Nuclear Bill (CBJ)**

By John Downey

Charlotte Business Journal, March 16, 2011

N.C. legislators had planned to introduce a bill this week making it easier for utilities to recover financing costs for nuclear plants during construction, but they delayed the filing because of the still-unfolding nuclear accident in Japan.

"They were going to introduce (the legislation) this week," Duke Energy Chief Executive Jim Rogers told the N.C. Utilities Commission on Tuesday afternoon. "The decision was made that this would not be the best week to do it, but it will be done before the end of the session."

The disaster in Japan, which may yet lead to a meltdown at a nuclear plant severely damaged by the earthquake and Tsunami last Friday, came up frequently at Duke's hearing Tuesday in front of the commission. Planning costs

Duke wants authorization from the commission to spend \$287 million more on planning for its proposed \$11 billion Lee Nuclear Station near Gaffney, S.C. The company says the spending will carry the planning through 2013, when it expects to receive a federal construction and operating license.



If approved, the authorization would make it possible for Duke to seek to add those planning costs into the rate base before the plant is built. Duke already had authorization to spend \$172 million on planning, so the total would be \$459 million.

A small troop of witnesses — private citizens, a state senator and representatives of advocacy groups — kicked off the hearing. They all opposed Duke's request. Each cited the events in Japan and said they raise new doubts that Duke would ever build the Lee plant. Ultimate passage

Rogers testified that the company is committed to the plant. He said the only thing that could dissuade Duke from pursuing the plant is if the legislature does not change North Carolina law to allow Duke to collect financing costs for the plant during construction without going to a full review of its rates.

He told the commission about the decision by legislators to put off the bill for now but said he remains confident the bill will ultimately be passed.

Speaking to reporters after his testimony, Rogers said the opponents had legitimate concerns. He described the human toll in Japan as tragic. And he said the nuclear crisis is likely to prompt regulators to reconsider some of the standards for design of plants.

"We don't know all the ramifications of what's going on in Japan yet," he said. "Common sense tells me it will force a rethinking of the role of nuclear power, but I don't know how much."

He said the Lee site is particularly safe on issues surrounding seismic activity. And he said Duke remains committed to the project.

John Downey covers the energy industry for the Charlotte Business Journal. Click here to read more recent postings on Power City.

To get an RSS feed for Power City click here.

## **Entergy Offering Assistance To Japanese (MSBJ)**

[Mississippi Business Journal](#), March 16, 2011

NEW ORLEANS — Entergy Corporation reports its nuclear employees are closely monitoring the situation in Japan in coordination with the US Nuclear Regulatory Commission, the Nuclear Energy Institute (NEI), the Institute of Nuclear Power Operations and industry peers.

Working through NEI, Entergy says it has offered its support and assistance to the Japanese nuclear industry.

Entergy added that its nuclear plants were designed and built to withstand the effects of natural disasters, including earthquakes and catastrophic flooding.

In a statement, Entergy wrote: "There will be lessons learned from this tragic event. Incorporating those lessons into operating experience is a hallmark of the global nuclear industry.

"It is worth noting that the natural environment surrounding the nuclear plants in Japan is very different from the environment surrounding Entergy's nuclear plants. According to information provided to us by NEI, and generally common knowledge in the scientific community, Japan is more susceptible to frequent and intense earthquakes than other developed countries.

"While it is still early, it appears that the nuclear units' safety systems functioned properly after the initial effects of the earthquake in Japan. Reports suggest it was the overwhelming tsunami that severely damaged the plant's cooling capabilities and recovery efforts."

Source: Entergy Corporation

To sign up for Mississippi Business Daily Updates, click here.

## **Progress Energy Holds Off On Crystal River Nuclear Plant Restart (TAMBIZ)**

[Tampa Bay Business Journal](#), March 16, 2011

Progress Energy Florida will delay the planned April restart of the Crystal River Nuclear Plant, which has been shut down since September 2009.

There's an indication of additional damage at the plant,

the company said in a press statement. Engineers are evaluating the situation and will conduct a thorough assessment of repair options and the impact to the plant's restart plans.

A portion of the building was damaged in late 2009 during the process of creating an opening in the structure to remove and replace the steam generators inside. The damage was separation of a portion of the concrete at the periphery of the containment building. There are now indications of additional separation result from repair work, the statement said.

There's no threat to public health and safety, the statement said.



Progress Energy (NYSE: PGN), headquartered in Raleigh, N.C., is the parent company of Progress Energy Florida, headquartered in St. Petersburg. Progress Energy Florida provides electricity and related services to more than 1.6 million customers in St. Petersburg, Clearwater and the central Florida area surrounding Orlando.

### **UPDATE:Progress Energy: Florida Nuclear Plant Restart Delayed On Repairs (WSJ)**

[Wall Street Journal](#), March 16, 2011

Full-text stories from the Wall Street Journal are available to Journal subscribers by clicking the link.

### **Officials: Safety Plan In Place At Millstone (WFSBTV)**

[WFSB-TV New Haven, CT](#), March 16, 2011

WATERFORD, Conn. --

After the recent nuclear emergency in Japan following a devastating earthquake and tsunami, emergency plans at Dominion Power's Millstone Nuclear Power Plant in Waterford are being reviewed.

Millstone has been generating electricity since 1970. Today, two units cooled from the waters of Long Island Sound power 500,000 homes, or more than 30 percent of the state's power needs.

Even though emergency plans are constantly updated, neighbors living in the shadow of the facility are beginning to wonder, "What if," when they see what's been unfolding in Japan.

"It's a little bit scary," said Millstone neighbor Rich Burgess. "I think we have a little more regulations than in Japan. I would hope we do."

Dominion spokesman Ken Holt said, "(Millstone) is designed to withstand earthquakes, tornadoes and flooding. We have been watching the events in Japan very closely, trying to learn what we can. As lessons are learned, as lessons come out, we will apply them to our own systems and make any improvements we need to make."

Waterford public safety complex had a dedicated emergency management facility that's ready to go at a moment's notice should any sort of incident occur at Millstone.

"Going forward, we're going to sit down with them and say, 'What else do we have to look at, what lessons did you learn from this event and how are you going to apply them so it's safer for our community,'" said Waterford First Selectman Dan Steward.

But Waterford isn't the only community affected by a potential nuclear incident. There is a 10-mile radius of homes and businesses that would have to react quickly to a possible evacuation of the surrounding area.

Chief Murray Pendleton of Waterford Public Safety said they look into potential evacuation issues.

"Right now, we're evaluating new traffic issues and concerns, checkpoints and all kinds of things associated with an evacuation process," Pendleton said.

"We get the pamphlet from the town, which is informative and appreciate. As far as if anything were to happen, I don't know what we would do. It's pretty close, and a lot of damage would definitely be done," said Abigail Blackburn.

Every household within 10 miles of Millstone received potassium iodide pills, which are to be taken if a nuclear incident began to unfold at Millstone.

### **NRC Hearings Begin Wednesday (VICTORA)**

[The Victoria \(TX\) Advocate](#), March 16, 2011

Victoria Advocate | NRC hearings begin Wednesday

Tuesday, March 15, 2011 12:00 AM

ADVOCATE STAFF REPORT

Originally published March 15, 2011 at 6:06 p.m., updated March 15, 2011 at 10:35 p.m.

IF YOU GO

WHAT: The Atomic Safety and Licensing Board hearings on Exelon's Early Site Permit.

WHEN: 9 a.m. Wednesday and 9 a.m. Thursday.

WHERE: The Leo J. Welder Center, 214 N. Main St.

The Nuclear Regulatory Commission is coming back to town on Wednesday. The Atomic Safety and Licensing Board, a branch of the NRC, is in town on Wednesday and Thursday to hear oral arguments over the Victoria County Station Early Site Permit submitted by Exelon.

The sessions will be open to the public, but only authorized representatives for the groups taking part in the hearings will be involved in the proceedings. Those authorized will be Texans for a Sound Energy Policy representatives, Exelon Nuclear Texas Holdings representatives and NRC staff.



## **N.J. Opposes 60-year Limit For Storing Used Nuclear Fuel (AP)**

[Associated Press](#), March 15, 2011

New Jersey wants to join a lawsuit against the federal government over how long spent nuclear fuel can be allowed to remain at reactor sites.

New guidelines from the Nuclear Regulatory Commission allow nuclear plants to keep their used fuel onsite for up to 60 years after the reactor is shut down, up from 30 years.

The state Department of Environmental Protection says the decision is not related to the Japanese earthquake and resulting nuclear emergency. A spokesman says the decision was in the works long before the crisis, adding that Wednesday is the deadline for states to seek to join the lawsuit.

DEP Commissioner Bob Martin said the state is concerned about the potential impact of the waste storage on New Jersey's environment.

New Jersey has four nuclear reactors.

## **New Jersey Challenges Federal Nuclear Waste Time Extension (BSWK)**

By Tom Schoenberg

[Bloomberg](#), March 16, 2011

March 15 (Bloomberg) – New Jersey challenged the US Nuclear Regulatory Commission's extension of the time allowed for storing spent nuclear fuel at power plants to 60 years from 30, saying the agency failed to consider health and safety risks.

Governor Chris Christie today asked the US appeals court in Washington for permission to join a lawsuit brought last month by New York, Vermont and Connecticut. The states claim the government didn't produce an environmental impact statement before changing the standard.

"The federal government has an obligation to develop a permanent plan for nuclear waste storage, and cannot avoid an answer by extending the time that radioactive waste is allowed to remain on sites in New Jersey and across the nation," Bob Martin, commissioner of the New Jersey Environmental Protection Department, said in an e-mailed statement.

The 60-year rule would apply to waste generated at four reactors in New Jersey, the statement said. They are Oyster Creek in Lacey Township, Hope Creek in Lower Alloways Creek, and two units at the Salem Nuclear Generating Station, also in Lower Alloways Creek.

The Oyster Creek site is scheduled to close in 2020, according to court papers.

The Nuclear Regulatory Commission published the rule change on Dec. 23.

Nana Efua Embil, a Justice Department spokeswoman, didn't immediately return a telephone call seeking comment.

The case is New York v. US Nuclear Regulatory Commission, 11-1045, US Court of Appeals for the District of Columbia (Washington).

## **UPDATE: NJ Seeks To Limit Nuclear Waste Stored At Shut Plants (WSJ)**

By Naureen S. Malik

[Dow Jones Newswire](#), March 16, 2011

Full-text stories from the Wall Street Journal are available to Journal subscribers by clicking the link.

## **Judge Upholds NRC Waiver For Nuclear Plant (WSJ/AP)**

[Associated Press](#), March 16, 2011

Full-text stories from the Wall Street Journal are available to Journal subscribers by clicking the link.

## **Energy Northwest Plans For Longest-Ever Outage (TRICITYH)**

By Annette Cary

[Tri-City Herald \(WA\)](#), March 16, 2011

RICHLAND – Energy Northwest is planning the longest refueling outage in the history of its nuclear power plant starting April 6.

That means temporary work for about 600 people living in the Mid-Columbia and more than 1,000 workers who will be coming to the Tri-Cities for short-term jobs.

"April, May and June should be really busy around here," said Kim Shugart, vice president of the Tri-Cities Visitor and Convention Center.



The outage workers don't spend as much as leisure travelers, but the center estimates that they still will spend \$8.5 million to \$11 million here, including money on lodging, meals and gas. Most workers who come from outside of the region are expected to stay in hotels or R.V. parks. Energy Northwest estimated about a third of the workers will be from the Mid-Columbia.

Already, about 500 of the 1,800 workers required for the outage are at the plant.

For the past decade, Energy Northwest has shut down the Columbia Generating Station every other year to add fresh fuel, do maintenance and make improvements that are difficult or impossible when the plant is generating nuclear power.

Typically, the outages last 35 to 45 days. But this year, Energy Northwest is estimating that the plant will be down for about 80 days.

About a third of the plant's 764 fuel assemblies will be replaced with new fuel, as is typical for the outages. The additional time for this outage is needed primarily to replace the plant's 25-year-old condenser, which turns steam generated by boiling water in the nuclear reactor back into water for re-use.

The condenser has become less reliable through the years. But by making the cycle more efficient, the 1,150-megawatt Columbia Generating Station is expected to gain 12 megawatts of electricity generation. Replacing the condenser is expected to cost \$113 million, but the additional electricity produced is expected to pay for the new condenser over time.

A dozen condenser modules, each weighing 100,000 pounds, are ready to be installed at the plant after the old condenser is cut apart and slid outside onto a motorized vehicle designed to handle large heavy loads.

Replacing a condenser is not common in the nuclear industry, according to Energy Northwest. The last replacement of a boiling water reactor condenser in the United States was in 1991 at the Peach Bottom plant in Pennsylvania.

In addition to the condenser replacement, extensive maintenance will be done during the outage.

"Maintenance ensures equipment reliability, improves efficiency and maintains our stringent safety margins," said Mike Paoli, Energy Northwest spokesman.

Energy Northwest has prepared about 3,100 work orders to support 16,000 individual tasks during the outage, Paoli said.

The budget of \$152 million for the outage includes \$42 million of expenses in the current fiscal year for the condenser replacement and \$11 million for valve work throughout the plant, \$6 million for the main generator rotor replacement and \$4 million for regular maintenance on a low-pressure turbine.

Among Mid-Columbia contractors for the work are Lampson Crane, Mid-Columbia Engineering, Dana Engineering and Northwest Inspection.

Some of the work will be done by a highly skilled work force that moves from outage to outage at the 104 US nuclear plants, Paoli said. Much of the work will be done by organized labor crafts workers, including carpenters, iron workers, welders, pipefitters and electricians.

But Energy Northwest is continuing to hire for the outage. Among unfilled jobs are positions for technical support specialists, a janitor, a tool crib attendant and a records management specialist.

Jobs are posted at [www.energynorthwest.com/erecruit/empl\\_outage.php](http://www.energynorthwest.com/erecruit/empl_outage.php).

When the plant shuts down April 6, it is expected to end a record operating run. Monday morning, the nuclear plant hit a record of 486 days of continuous operation.

-- Annette Cary: 509-582-1533; [acary@tricityherald.com](mailto:acary@tricityherald.com).

## **Wash. Nuke Operators: Plant Prepared For Disaster (AP)**

**The only nuclear power plant in Washington is the Columbia Generating Station, operated by Energy Northwest on the Hanford nuclear reservation.**

Associated Press, March 16, 2011

RICHLAND, Wash. -- The only nuclear power plant in Washington is the Columbia Generating Station, operated by Energy Northwest on the Hanford nuclear reservation.

In response to safety questions raised by the earthquake and tsunami in Japan, a spokesman says operators are confident the Hanford plant is prepared for a disaster.

Spokesman Mike Paoli told KVEW it has multiple backup systems to cool the core during a power failure. He says the plant was built to withstand a magnitude 6.9 quake within 12 miles. And the plant was placed five miles from the Columbia River, out of reach of any flooding, including a break in the Grand Coulee Dam.

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Information from: KVEW-TV, <http://kview.kennewick>

## **Learn From Disaster In Japan (QUADCITY)**