# *Wis. Reactors Unsafe at Any Speed*

## Operators Repeatedly Failed, Faulted, Fined

Wisconsin has three power reactors, two at Point Beach and one at Kewaunee, whose operations are plagued with unplanned shutdowns caused by accidents that have resulted in official warnings, fines and even a criminal conviction. A smaller reactor in La Crosse, shut down since 1987, still stores high-level waste fuel on-site and is undergoing dismantlement.

Every time the industry has a mishap, nuclear power is called "safe" and accidents are declared "no danger to the public." The partial record below tells another story.

The highest safety failure warning in the industry is a "Red" finding by the Nuclear Regulatory Commission (NRC). Only four have ever been issued in the country and two of them went to the Point Beach reactors. Wisconsin Electric Power Company (WEPCO) ran the two-reactor, 1,023-megawatt site, 30 miles southeast of Green Bay, until late 2006, when it was bought by FPL Energy of Juno Beach, Florida.

Below is a sampling of the unsafe, unplanned and radioactively dirty record of Wisconsin's reactors.

**January 15, 2008**

At Point Beach's Unit 1, an "unusual event" emergency was prompted by the complete loss for more than 15 minutes of all offsite power used by essential electrical "buses," mandating notification of the NRC. A supply breaker opened "for unknown reasons" and was being investigated.

**January 12, 2007**

A turbine and reactor trip at Kewaunee, now owned and operated by Dominion Resources Inc. of Richmond, Virginia, was caused by a loss of auto-stop oil pressure on the main turbine. Following the trip, one of the moisture separators on the main turbine had its associated steam inlet valve fail to open, which resulted in contaminated steam being vented to the environment.

**December 8, 2006**

At Point Beach, the Control Room Emergency Filtration System was declared inoperable. The Control Room Charcoal Filter Fan tripped during a surveillance test, an event that could have prevented the filter's performance during a contamination emergency.

**October 12, 2006**

At the long shut down La Crosse reactor, airborne levels of radioactive americium-241 contamination inside the reactor building rose to 10 times "normal." By Oct. 16, "Reactor building ventilation to the outside environment through HEPA filters had not reduced the level of Am-241 as expected." An "unusual event" was declared and investigators began searching to identify the source of the americium.

**August 22, 2006**

In an August 22, 2006 letter to Point Beach, the NRC charged that a senior reactor operator was discriminated against by reactor management for identifying potential technical violations. The discrimination was an apparent violation of employee protection law.

**August 14, 2006**

The NRC announced that groundwater beneath Kewaunee is contaminated with radioactive tritium and declared the pollution to be of "possible safety or public interest significance." Reactor staff detected tritium in groundwater at several locations beneath the auxiliary and turbine buildings August 9. The contamination leaked into four shafts which are used to measure settling of the structures. The shafts are not interconnected, indicating a large amount of contaminated water. The source of the leak, which spewed 1 gallon every 5 minutes, is still unknown.

**March 20, 2006**

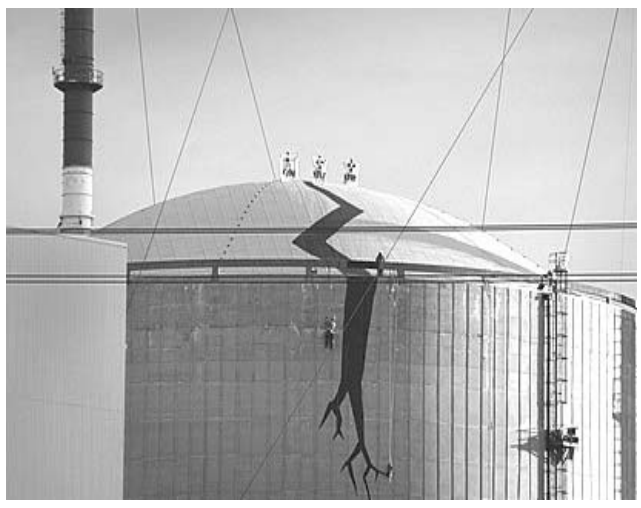
The Kewaunee reactor faced increased NRC oversight after being cited for two safety violations, one concerning failure to properly analyze the impact of flooding and another involving a design flaw affecting the reactor's backup cooling water system. The NRC found that the reactor had a "moderate degradation in safety performance" in 2005 even while it was shutdown for five months.

**December 16, 2005**

Point Beach paid a $60,000 fine imposed Jan. 13, 2005 after two workers "deliberately provided NRC inspectors with inaccurate information" about the critique of an emergency preparedness drill at the reactor in August 2002. The two were fired, and one was convicted in federal court of knowingly making false written statements to the NRC.

**November 29, 2005**

The Kewaunee reactor tripped following a main feedwater pump failure. All three auxiliary feedwater pumps kicked in and the reactor was stabilized at "hot shutdown." The operators said, "There are no known primary-to-secondary leaks" — leaving open the chance of *unknown* primary-to-secondary leaks. Primary coolant is highly contaminated with radioactive fission products from direct contact with fissioning uranium fuel. It is never supposed to leak into the secondary cooling system, but often does.



**Better warned by art than an earthquake. Greenpeace activists painted a symbolic crack on the dome at Tihange Nuclear in Belgium.**

**November 25, 2005**

The control room received a fire alarm on the main generator and the fire protection system was activated. Air sampling showed carbon dioxide in the storage tank room at life-threatening levels. An "unusual event" was declared based on "a release of toxic or flammable gas on site and portable monitors indicate toxic or explosive concentrations at life-threatening levels of the gas near the spill area." Ventilation of the affected areas was in progress to reduce the toxic gas levels.

**February 23, 2005**

The Kewaunee reactor was shutdown when all three auxiliary feedwater pumps were declared inoperable. During the shutdown to fix the problem, an automatic reactor trip was caused by low water in the 'B' steam generator. Another problem occurred when at least 1,000 gallons of service water, which is drawn from Lake Michigan, entered the steam generators and had to be flushed out.

**November 9, 2004**

While operating at 100 percent power, Point Beach Unit 2 sprang a steam leak from a valve in the main steam flow transmitter. The leak of potentially contaminated steam forced an unplanned shutdown. The leak involved what is called "containment penetration" of the main steam line passing through the concrete containment building. Accordingly, operators declared a Technical Specification Condition "not met," forcing them to isolate the "affected penetration flow path with a completion time of 72 hours." Workers were unable to meet the allowed completion time for this task.

**October 30, 2004**

A worker was contaminated inside the Kewaunee reactor and was rushed to the hospital after immediate decontamination attempts failed. The NRC said it did not know what isotopes had been involved.

**April 8, 2004**

Point Beach paid a $60,000 fine imposed March 20, for last summer's problems with the reactor's backup cooling pumps.

**February 11, 2004**

The ongoing risk of a breakdown in Point Beach's cooling feedwater pumps resulted in a NRC "Red" finding, the agency's most severe safety failure warning.

**October 2002**

A "Red" finding was issued by the NRC against Point Beach for problems with cold water circulation for cooling the reactor.

**June 5, 2001**

Kewaunee's reactor was shut down when the computer Safety Parameter Display System and Emergency Response Data System both failed. The operators did not know the status of "emergency response availability."

**November 18, 1997**

Point Beach Unit 2 was hastily shut down because of electrical problems.

**August 12, 1997**

The NRC recorded 21 violations at Point Beach in the 90-day period between Dec. 1996 and Feb. 1997.

**July 25, 1997**

Unit 2 at Point Beach was shutdown when a cooling water pump failed.

**February 18, 1997**

Unit 1 at Point Beach was shut down when a cooling water pump defect necessitated the pump's replacement.

**December 1996**

Point Beach owner WEPCO was fined $325,000 for 16 safety violations and a 1996 explosion inside a loaded high-level waste cask. The NRC said WEPCO was "inattentive" to their duties, "starting up a power unit while one of its safety systems was inoperable," and had failed to install "the required number of cooling pumps."

**September 21, 1996**

The Kewaunee reactor was shut down when "more than expected" corroded steam tubes were discovered.

**May 28, 1996**

At Point Beach, a potentially catastrophic explosion of hydrogen gas upended the 6,390-pound steel cask lid while it was atop a storage cask filled with high-level waste. The lid was being robotically welded to the cask, and a spark caused what the owners called a "gaseous ignition event."

***— A footnoted version of this chronology is available as a Nukewatch Fact Sheet. Email us if you'd like to put it to use. <nukewatch@lakeland.ws>***

# What's the Real Cost of Nuclear Power?

**By Cassandra Dixon**

Because nuclear power reactors take so long to build their estimated capital costs include the "overnight" cost, which is the price of the reactor if it could be completed immediately *plus* the costs incurred during construction including interest. Florida Power and Light told *The Tampa Tribune* recently that the "overnight cost of its two-reactor project [in South Florida] would range from $12 billion to $18 billion, more than twice as high as Progress Energy's Dec. 2006 estimate."

The Keystone Center, a nonprofit research group in Colorado that includes nuclear industry personnel, estimates the completed nuclear reactor capital costs to be in the range of $3,600 to $4,000 per kilowatt of generating capacity.

**Once a nuclear reactor is operating, what is the kilowatt hour cost of its electricity?**

Fuel costs and other maintenance costs are estimated by the Nuclear Energy Institute at 1.72 cents per kilowatt-hour. The Keystone Center's report estimated the cost of decommissioning a reactor at 0.1 cent. The federal charge for nuclear waste storage is 0.1 cent per kilowatt-hour. Using the Keystone estimates, a kilowatt-hour costs between 8.3 and 11.1 cents per kilowatt-hour.

The Wall Street firm Moody's estimated in October 2007, that the capital cost of new reactors would be between $5,000 and $6,000 per kilowatt, or 6.2-to-9 cents per kilowatt-hour. Moody's estimate brings the overall kilowatt-hour cost of reactor-generated electricity from new reactors up to about 14 cents per kilowatt-hour.

**What is the kilowatt-hour cost of renewable alternatives to coal power and nuclear power?**

Wind energy is already more economical than nuclear power, and broad expansion of wind power capacity is taking place in many states.

According to the U.S. Department of Energy, solar energy is "on track to reduce the cost of electricity produced by photo voltaic [solar panels] from current levels of 18- to-23 cents per kilowatt-hour to 5-to-10 cents per kilowatt-hour for commercial use, and 7-to-12 cents for residential use, by 2015. That's the earliest a new power reactor could come on line in the U.S. New reactors could become economically obsolete before new ones begin generating power.

**Are companies ordering new nuclear reactors now?**

No company has ordered a nuclear power reactor in the U.S. since 1978. Standard & Poors, the well-known Wall Street credit rating agency, has stated that, " … an electric utility with a nuclear exposure has weaker credit than one without and can expect to pay more on the margin for credit."

As ever, the industry is waiting for 100 percent loan guarantees from the federal government before taking orders. Without this taxpayer subsidy, reactor construction remains too risky for investors. Rising uranium prices and shortages of skilled labor have the potential to drive operating and maintenance costs out of reach. In addition, construction delays and overruns pose additional risk. The French company Areva is currently two years behind schedule in building in Finland one of the only reactors now being built in the West. Originally estimated at 3 billion Euros (about $4.5 billion), the construction cost has now risen to 4.5 billion Euros, $6.75 billion). The reactor is years from completion.

The escalating costs of finding, characterizing and developing a deep geologic repository for nuclear waste provide an added element of economic risk to new reactor building. Expanding nuclear generating capacity will likely necessitate a second U.S. repository, even when it is already unclear whether the proposed Yucca Mountain waste site can ever be licensed. Adding more reactor-generated waste will translate to more repositories, higher costs for new repositories, for proposed waste reprocessing and for on-site/dry cask storage, or all three.

Furthermore, heat waves and droughts have caused European and U.S. utilities to shutdown some reactors and reduce operations at others. Since such events are expected more frequently in a warming world, an element of intermittency has been introduced into nuclear energy, making it an even more dubious investment for electric utilities.

**Are some nuclear power costs paid by the taxpayer?**

Yes. The nuclear industry has always benefited and depended upon federal tax subsidies for research and development, and the federal government has assumed liability for the long-term storage and management of high-level waste fuel from commercial reactors. Due to the risk of catastrophic accidents, nuclear reactors still get a significant subsidy in the form of Single-Payer accident insurance under the federal Price-Anderson Act. Additional federal subsidies for license applications and other costs were enacted as part of the Energy Policy Act of 2005. Another $25 billion in federal loan guarantees were recently approved by Congress.

***— Cassandra Dixon, a former Nukewatch staffer, operates Mary House, giving hospitality to people visiting prisoners at the Oxford federal prison camp.*** *— Sources on page 8.*