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# Special Report: Terror Peril Seen at Indian Point

By RICHARD T. PIENCIAK

The concrete containment domes of the Indian Point nuclear complex stand tall along the banks of the Hudson River, just 24 miles from the northern border of the Bronx.



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When the two active reactors are working at capacity, they generate enough electricity to light nearly 2 million homes.

Since the now-closed Unit 1 began operations 40 years ago, there's been intense debate about whether the plant can run safely . But the terrorist attack on the World Trade Center has turbocharged efforts to have the nuclear facility shut.

Federal documents reviewed by the Daily News as well as interviews with experts suggest that the complex may be more vulnerable to attack than previously known. In the age of Al Qaeda, these are the main concerns:

The containment domes at Indian Point's two active reactors were not built to withstand a terrorist attack by modern-day jumbo jetliners, U.S. Nuclear Regulatory Commission documents show.

The plant's cumbersome four-county evacuation plan is untested and is the subject of growing derision. Some 20 million people live within 50 miles of Indian Point, the highest population density around a nuclear plant in the country.

The three buildings that house 1,500 tons of highly radioactive spent fuel rods — Unit 1 was shut in 1974 — are nowhere near as strong as the containment domes — especially the roofs and exposed sidewalls. NRC documents suggest a severe accident at one of Indian Point's spent fuel storage buildings — say, one caused by a terrorist airliner attack — could unleash a radioactive plume rivaling an aerial release from a reactor core meltdown.

The two active reactors, now owned by Entergy Corp., have a long history of safety problems and violations. Unit 2, bought last year from Consolidated Edison, is the only commercial nuclear plant in the country to carry a "code red" safety designation because of "multiple degraded cornerstones." NRC officials left the red designation in place after a reevaluation in December. Over the years, Unit 3, bought in 2000 from the New York Power Authority, also has been cited for numerous safety violations.

Entergy officials insist the plants are safe and warn that closing Indian Point, which supplies 7% of the state's power, could lead to rolling blackouts and price spikes.

Studies show that a shutdown could cause an 8%-to-10% increase in the cost of electricity to consumers in the peak months of July and August.

However, replacement power could be purchased from the New England region, which has a surplus. Some critics say the Indian Point units could be converted to gas fuel. Also, several highly efficient gas-fired power plants are slated to come on line within the state in 2004.

The airplanes that were flown into the World Trade Center towers on behalf of Osama Bin Laden ([news](#) - [web sites](#)) five months ago could just as easily have been used to attack Indian Point's Units 2 and 3.

In his State of the Union address, President Bush ([news](#) - [web sites](#)) warned that the nation's nuclear power plants could be next on Bin Laden's hit list after he revealed diagrams of American nuke sites had been discovered by U.S. troops in Afghanistan ([news](#) - [web sites](#)).

U.S. Nuclear Regulatory Commission officials issued an alert last month warning plant operators that terrorists may be planning an attack on one or more of their facilities using hijacked commercial jetliners.

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Without providing details, James Kallstrom, a former FBI ([news](#) - [web sites](#)) official who serves as Gov. Pataki's statewide director of public security, has assured the public that Indian Point is secure.

Kallstrom has said his office made 24 specific recommendations to the NRC and Indian Point operators, most of which were implemented. On Feb. 14, the NRC issued security regulations, basically codifying the changes called for by Kallstrom and his review team.

Still, as Sept. 11 has receded, the official response has flagged — especially, involving greater protection around nuclear sites.

No-fly zones imposed by the Federal Aviation Administration ([news](#) - [web sites](#)) over nuclear reactors were removed in November. Gone, too, are 24-hour Coast Guard patrols in the Indian Point section of the Hudson.

### Terrorist Threat Is Real

When the Indian Point plants were built, planners did not consider the possibility of a terrorist attack using a commercial jetliner. Aircraft then were smaller, lighter and carried less fuel.

Ed Lyman, scientific director of the Nuclear Control Institute, a Washington-based group that opposes nuclear arms proliferation, said the Trade Center attack "was a real eyeopener" that required "another look at what the worst threat really is.

"The issue of a jumbo jet loaded with fuel and used as a weapon is not something that was in any nuclear reactor's design basis," he said.

According to an NRC report reviewed by The News, half of today's jumbo jets could penetrate a concrete wall 5 feet thick. The tops of the containment domes on the two operating Indian Point reactors are only 3½ feet thick.

### Spent Fuel Rods Concern

The vulnerability of the buildings that house more than 30 years of spent fuel rods could pose an even more serious threat.

"They are very susceptible to large planes," said Mark Jacobs, a co-founder of the Citizens Awareness Network, a grass-roots organization. "They are not as reinforced as the containment domes."

Each reactor's control room also is outside the containment dome, thereby representing another potential "soft target," according to Kyle Rabin, policy analyst for the Riverkeeper, an environmental watchdog organization that has filed a petition with the NRC seeking an Indian Point shutdown.

David Lochbaum, a nuclear safety engineer with the Union of Concerned Scientists, told The News that the roofs of the Indian Point spent fuel buildings contain only 5 to 8 inches of concrete and that the sidewalls — designed to withstand a tornado, not an airplane attack — contain about 18 inches of concrete near the bottom and about 12 inches near the top.

The Indian Point containment domes have not only thicker tops, but sidewalls that contain up to 6 feet of concrete, Lochbaum said.

Michael Slobodien, Entergy's director of emergency services, says the spent fuel storage buildings are relatively small, largely underground and shielded from a direct aircraft attack by adjacent structures.

Lochbaum agrees it would be difficult, but not impossible, for an airplane to strike the storage pools.

"If a plane were to end up in there and cause the water to drain away, it would have severe consequences because there is five to six times the amount of radioactive material in those buildings than in the reactor, and there are fewer barriers to the outside world," Lochbaum said.

Citing an NRC study, Lochbaum said the death toll from a successful terrorist attack on an irradiated fuel pool could be comparable to the fatalities sustained by a major accident that breached the containment dome.

A worst-case scenario accident at Indian Point, with a meltdown and complete failure of the containment structure, could lead to about 50,000 deaths in the first year, according to a study conducted by the Sandia National Laboratory for the NRC.

The problem of spent fuel storage has been a long-term Achilles' heel for the nuclear power industry. Deadline after deadline has passed for the creation of a high-level waste facility to accommodate used fuel rods from the nation's 103 operating plants.

Last week, after the United States spent \$7 billion on research during the past 20 years, President Bush recommended that the Yucca Mountain site in Nevada serve as the nation's first high-level radioactive waste depository. Nevada officials have vowed to fight the designation.

Because construction of a national high-level radioactive waste facility has been delayed for so long, many sites — especially older ones such as Indian Point — have been forced to house more spent fuel for longer periods than was envisioned when the plants were built.

A breach of one of the Indian Point storage buildings could cut off the water supply to the spent fuel pools, though Entergy says it has multiple redundant systems in place.

An NRC study says that in a worst-case scenario, the lack of water could cause a massive fire fueled by the zirconium-alloy cladding that surrounds the fuel rods. Such a fire could lead to the disbursement of highly irradiated materials, including plutonium, one of the most lethal substances known to man.

A spent fuel pool fire also would lead to widespread release of cesium-137, a radioactive isotope with a half-life of 30 years that contributed to most of the off-site radiation exposure after the 1986 Chernobyl accident.

Dr. Gordon Thompson, a scientist hired by Riverkeeper, says NRC studies assume that 100% of the cesium-137 inside a spent fuel pool would be released into the atmosphere during a pool fire.

#### 10-Mile vs. 50-Mile Zone

Indian Point critics have taken the opportunity of the increased post-Sept. 11 focus to draw attention to the 10-mile evacuation zone around the site, home to 288,000 people in parts of Westchester, Orange, Rockland and Putnam counties.

"The evacuation plan is not worth the paper it is written on," said Vincent Tamagna, a member of the Putnam County Legislature, which has passed a resolution calling for the plant's shutdown. "No one could demonstrate to me that it will work."

Riverkeeper's Rabin said it is critical that the zone be broadened. "There is a gaping hole in the evacuation plan," he said, "and that is the lack of protection outside of 10 miles."

Even an NRC document refers to a "peak fatality radius" of 17? miles and "peak injury radius" of 50 miles.

At a three-hour forum on Indian Point safety last Tuesday at Panas High School in Cortlandt Manor, Fred Schminke of Continental Village in Putnam County wondered why signs are not posted along evacuation routes — as they are on hurricane emergency roads.

Entergy's Slobodien replied that actual evacuation instructions "would depend on the wind flow."

Holding up a copy of the Westchester County evacuation map, which contains color-coded routes and evacuation areas, an exasperated Schminke asked, "In other words, I shouldn't be using this?"

Slobodien recommended that people "listen to county officials" on the radio in the event of an accident.

In an interview, Slobodien acknowledged that the evacuation plan is "clearly a work in progress." He said that although improvements are constantly being made, the current plan is adequate to safely evacuate everyone living within the 10-mile zone.

He also contended that the possibility of a major nuclear accident is so remote that there is no need to expand the evacuation zone.

However, that is exactly what a growing number of people and local officials want: a 50-mile zone that would take in all of New York City and parts of New Jersey, Connecticut and Pennsylvania.

"There is absolutely no question that New York City is in imminent danger should there be any kind of significant event either from natural disaster, mechanical breakdown or terrorist attack at Indian Point," said Dr. Irwin Redlener, president of Children's Hospital at the Montefiore Medical Center in the Bronx. Redlener also is on four task forces on disaster preparedness and terrorism.

Elected officials in the four counties covered by the 10-mile zone recently recertified their localized emergency plans.

Gov. Pataki, who grew up in Peekskill near Indian Point and still lives within the 10-mile zone, then certified to the NRC and Federal Emergency Management Agency ([news](#) - [web sites](#)) that the plans were in order.

In doing so, however, Pataki called on the feds to review their regulations. "It is pretty much pro forma," the governor said. "Do you have the buses in place? Do you have the sirens in place? That might meet the guidelines and regulations, but in my view it's not good enough."

Last week, Westchester County announced plans to distribute potassium iodide to school students in the region as a precautionary measure and said it may expand the program to all local people.

Potassium iodide can prevent thyroid cancer for some forms of radiation. It does not, however, protect against cesium-137 and other isotopes.

No Longer Just Fringe Issue

Maureen Stark of Yorktown Heights celebrated her 43rd birthday Tuesday at the Cortlandt Manor forum.

The mother of three children ages 14, 11 and 6 says the attention given to the Indian Point evacuation plan since the twin towers attacks has made people such as her — "nonpolitical, nonactivists" — take notice.

She doesn't trust the official evacuation plan and doesn't intend on following it.

"My kids have a secret plan. They will escape school, and we will all meet at a designated spot," she said. "I know at least 20 other families who are going to do the same thing.

"Sept. 11 has tapped into my maternal instincts," Stark said. "My children go to different schools. Under their plan, in the event of an accident I would have to pick which child I go to rescue first.

"That's just not right. So from now on, I'm going to be very involved."

Evacuation Plan Has Flaws

- Evacuation plans exist only for those living within 10 miles of the plant, though a U.S. Nuclear Regulatory Commission document refers to a "peak fatality radius" of 17 1/2 miles and "peak injury radius" of 50 miles.
- Students would be transported out of the emergency zone on school buses before any public announcement, to be reunited with their parents at pre-determined reception centers outside the evacuation zone.
- Not all schools in a particular district are assigned to the same reception center. That means three children from the same family could be taken to three different locations.
- Evacuation of students, nursing home residents and hospital patients could take up to 10 hours.
- No consideration is given to the possibility that students would use cell phones to tip off their parents.
- Other than threats of arrest, no provisions have been made for panicked parents who rush to their children's schools to pick them up.
- Bus drivers would be required to make as many as three trips in and out of the evacuation zone to rescue all of the school children.
- Female drivers of child-bearing age are exempt — that's up to 60% of the bus drivers in some "emergency response planning areas."
- The plans assume that already overcrowded local roads will be able to handle maximum traffic flow.
- The plans assume that no one residing outside the 10-mile zone will evacuate. Experience from past disasters shows that many of those would flee on their own, a phenomenon known as "shadow evacuation." At Three Mile Island in 1979, the governor issued a voluntary advisory for the evacuation of 3,400 pregnant women and preschool children living within 5 miles of the plant. Instead, 144,000 people fled, from as far as 40 miles away.
- Any plant accident is expected to unfold gradually, with as much as eight hours of warning. Plans do not consider the possibility of a terrorist attack, with a sudden release of a radioactive plume.
- The plans assume that no one working at the plant would leak information about an unfolding accident.

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