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FEATURE STORY

Too Close for Comfort

by Peter Bradford

Most Americans are finding it harder than ever to take their local nuclear power plants for granted. A former Nuclear Regulatory Commission commissioner forecasts a cloudy future for an industry that suddenly looks vulnerable - in more ways than one.





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In the years after Hiroshima but before nuclear power, the Atomic Energy Commission (AEC) created a committee to evaluate the radiation dangers of nuclear power plants. With no experience to guide it, the committee -- seeking to make plants inherently safe -- recommended that power reactors be sited far from cities. Its chair, Edward Teller, went so far as to suggest building them underground. These conservative approaches collided with economic reality. With oil and coal inexpensive, utilities would not undertake the cost of building new power plants underground or far from their urban power consumers. Instead, massive concrete containment domes became the primary safeguard. A 1957 AEC study concluded that a catastrophic accident breaching the containment might cause 3,400 "early" deaths and 43,000 serious injuries. Nevertheless, among the first sites licensed by the AEC were Indian Point, twenty-five miles north of New York City, and Dresden, close to Chicago.

As reactors grew larger, containment alone no longer sufficed. Cooling and pressure suppression systems were added. The AEC, later the Nuclear Regulatory Commission (NRC), still had to assure "adequate protection of the public health and safety." However, the ideal of inherent safety had been displaced by a less reliable safeguard: government's ability to predict. The commission undertook to sort possible events from impossible events. Some events that might defeat the safety systems were considered impossible, and therefore, plant owners were not required to defend against them. The deliberate crashing of a large, fully fueled passenger plane was among these impossible events.

On September 11, American Airlines Flight 11 flew down the Hudson River, directly over Indian Point on its way to the World Trade Center. The wind blew north to south that morning.

September 11 demands fundamental reassessment of several aspects of nuclear regulation. The inevitable uncertainty, controversy, and expense -- forces that have prevented the ordering of any new U.S. nuclear power plants since 1978 -- are not good news for the industry.

Until September 11, the industry had been celebrating remarkably improved economic performance and a political resurgence. The Bush administration, especially the vice president, had supported the construction of new plants using safer designs -- so safe, it was said, that containment would not even be necessary. Now, new U.S. plants seem remote. As potential investors and potential neighbors see the National Guard dispatched to nuclear power sites, as no-fly zones are established overhead, and as anti-aircraft guns are installed at nuclear facilities in Europe, yesterday's Edward Teller sounds wiser than today's Dick Cheney.

A few times in the five-decade history of nuclear power, some event once deemed impossible has taken place, forcing fundamental change, great expense, and the abandonment of

plants already built. In 1974, India tested a nuclear weapon using materials provided, for peaceful purposes, by the United States and Canada. President Ford then ordered the deferral of U.S. programs for nuclear fuel reprocessing and fast breeder reactors, which would make bomb material more accessible. President Carter later canceled them outright.

In 1975, a technician with a lighted candle started a fire that disabled most of the safety systems at the Brown's Ferry plant in Alabama. Expensive reengineering of fire protection and other systems followed. The changes wrought by Brown's Ferry paled, however, beside the changes that followed Three Mile Island in 1979. The required modifications cost billions of dollars, and many plants were canceled.

In short, events that change what the NRC calls the "design basis accident" can have significant consequences for the nuclear industry. While September 11 involved nothing nuclear, its implications for the "design basis terrorist event" are dramatic.

First, the vulnerability of nuclear plants to large aircraft must be reassessed. Soon after the World Trade Center attacks, the NRC claimed that nuclear reactor containments would withstand similar impacts. That assertion is indefensible. The NRC – though not some power plant owners – has now abandoned it and says that it can't predict the outcome. For that matter, neither can terrorists. Containment failure does not automatically mean radiation release, and radiation release does not automatically mean catastrophe. Uncertainty may be enough to cause terrorists to go elsewhere. But uncertainty does not allow the NRC to assure "adequate protection of the public health and safety."

The NRC will also have to reexamine its assumptions about truck bombs, armed attack, and sabotage from within; about the transportation of nuclear waste; about terrorists' ability to acquire nuclear weapons through power reactor programs abroad. In all of these categories, it will have to update its safety assumptions to include attacks by large trained groups willing to become martyrs. Furthermore, the commission can no longer permit the kinds of shortcomings it has tolerated in the past, such as the several recent instances in which nuclear plants failed their security drills.

The industry and the NRC need to make substantial changes at all nuclear power plants. Everyone who has flown since September 11 has some sense of the practical meaning of increased security: more safety, but also more regulation, more delay, more expense. Plants will have to hire more people, install more checkpoints, build more barriers. Plants long since completed may have to make substantial design modifications. None of this comes cheap. Even the related public hearings will be expensive and contentious. Moreover, the costs can no longer be rolled into monopoly electric rates. Most power plants must now compete for their customers, and higher costs will mean lower profits.

As it happens, the law that provides nuclear power's insurance framework – and sets an upper liability limit for a catastrophic accident – is up for renewal. Having just spent billions to revive the airline industry, Congress might show some skepticism about further open-ended exposure to unforeseeable events.

Yet there is still strong sentiment in Congress for reauthorizing the liability law without change. Unfortunately, much of the energy debate on Capitol Hill is dominated by arguments that amount to "The facilities are safe because they are needed" or "No chain is weaker than its strongest link" or "The unknowable can be stated with certainty."

So the unforeseeable event of one decade becomes the nightmare of the next, one almost-rational step at a time. An enemy sufficiently resourceful and determined could convert today's nuclear power plants to weapons. Perhaps that vulnerability can be corrected. If not, the plants – which are replaceable, though at some cost – should close.

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