



# Factsheet #3: Safety

Just the Facts: The Five Fatal Flaws of Nuclear Power

The safe operation of nuclear plants ought to be the paramount mission of the U.S. Nuclear Regulatory Commission (NRC), but recent events and trends indicates a policy that is overly accommodating to the wishes of industry—even to the point where safety has been compromised. The risk of a catastrophic accident at a nuclear power plant remains, but unfortunately, the NRC has failed to do all in its power to ensure that that risk is minimized.

## DEFICIENT SAFETY CULTURE AT THE NRC AND IN INDUSTRY

A 2002 survey of the NRC's workforce,<sup>1</sup> commissioned by the NRC's Office of the Inspector General (OIG) and conducted by an independent contractor, revealed troubling facts about employees' confidence in the agency's ability to be an effective regulator. Many employees reported a concern that "NRC is becoming influenced by private industry and its power to regulate is diminishing." Meanwhile, only slightly more than half of NRC employees reported feeling that it is "safe to speak up in the NRC"—a finding that does not instill confidence in the NRC's ability to identify potential safety problems before they become serious.

The safety culture of the workforce at some nuclear plants has been so deprived that it has compromised the safe operation of the facilities. At the Salem and Hope Creek nuclear plants in New Jersey, operated by PSEG Nuclear, serious mismanagement and a deficient safety culture led to the deterioration of the physical condition of the plant, a situation brought to light by a whistleblower who had been fired from her job as a manager at the plant—allegedly for voicing safety concerns. Three independent assessments of the situation confirmed the problems at the plant, and an NRC review found "weaknesses in corrective actions and management efforts to establish an environment where employees are consistently willing to raise safety concerns." The NRC also found a general sentiment among employees of the plants that PSEG had emphasized production over safety.<sup>2</sup>

## CASE STUDY: DAVIS-BESSE

Mismanagement by FirstEnergy Nuclear Operating Company and lax oversight by the NRC allowed severe degradation of the nuclear reactor vessel head at the Davis-Besse nuclear plant in Oak Harbor, Ohio, to go unnoticed for years until it was finally discovered in March 2002 that a mere three-eighths of an inch of metal cladding was all that contained the essential coolant pressure boundary of the reactor vessel, a dire situation



*The hole in the reactor head at Davis-Besse, measuring 8" wide.*

that could have easily led to a reactor breach, subsequent loss of coolant, and potential meltdown.

A December 2002 report by the NRC's Office of the Inspector General (OIG) found that the NRC's decision to allow the continued operation of Davis-Besse "was driven in large part by a desire to lessen the financial impact on [FirstEnergy Nuclear Operating Company] that would result from an early shutdown." The OIG further concluded that the "NRC appears to have informally established an unreasonably high burden of requiring absolute proof of a safety problem, versus lack of reasonable assurance of maintaining public health and safety, before it will act to shut down a power plant."<sup>3</sup>

The U.S. Government Accountability Office (GAO)—the investigative arm of Congress—also sternly criticized the NRC for its failure to discover the problem at Davis-Besse sooner, finding in a May 2004 report that the NRC's inadequate oversight prevented an earlier shutdown, even though the agency was fully aware of the potential for the problem, which had manifested at other facilities. The GAO further expressed dismay that the NRC lacks formal guidance procedures for deciding whether to shut down a plant.<sup>4</sup>

The NRC proposed \$5.45 million fine against FirstEnergy in April 2005, but this fine does not correct the NRC's

emphasis on plant production and profitability, which inhibited an earlier shutdown and inspection of the troubled plant. The NRC allowed Davis-Besse to restart in March 2004.

## LICENSE RENEWALS & POWER UPRATES

As many of the initial 40-year operating licenses for nuclear power reactors begin to expire, the NRC has been aggressively renewing operating licenses for an additional 20 years. Since 2000, the NRC has approved license extensions for 32 reactors at 18 power stations, and another eight renewal applications are under review for 16 power reactors. In the near term, 17 more applications for license extensions of 22 reactors are expected.<sup>5</sup> So far, not a single application has been denied, despite the inevitable fatigue of critical components and the fact that onsite storage of waste and security of fuel pools remain serious unresolved issues.

Meanwhile, the NRC has been allowing operators to increase reactor power, issuing 102 power uprates since 1977 for a total amplification of 4185.5 megawatts electric (MWe).<sup>6</sup> The NRC expects power uprate requests at another 24 plants within the next several years that, if approved, would result in a power increase of about 1692 MWe.<sup>7</sup>

Such license for extended and amplified reactor operation does not come without cost, and this regulatory *laissez-faire* may be compromising the safety of these facilities. For example, following the Extended Power Uprate (EPU) in 2001 at Exelon's Quad Cities and Dresden nuclear power stations in Illinois—each of which increased reactor power by about 17 percent—the operator discovered multiple cracks in the steam dryers of each of the four reactors at the two stations. Loose debris from the cracked components were found in the reactor coolant system and likely ended up at the bottom of the reactor vessel at one of the Quad Cities reactors. Inspectors at the plants also observed “flow-induced vibration damage on components and supports for the main steam and feedwater lines,” as well as other power uprate-induced problems at the plants. As a result, Exelon was forced to return the Quad Cities reactors to pre-EPU levels.<sup>8</sup> But despite Exelon's serious problems, the NRC has continued to allow other similar reactors to operate at extremely high power levels.

## NRC RESTRICTS INDUSTRY

### ACCOUNTABILITY FOR SAFETY

The NRC has revised its licensing processes to give “certainty” to the industry through the limitation of public involvement in NRC licensing and regulatory actions. Under this new regime, the NRC has effectively crippled the public's ability to raise important questions about the safety of operating and proposed nuclear facilities, and it has impaired the ability of stakeholders to effectively judge the NRC's capacity to ensure that safety.

In January 2004, the NRC formalized revisions to its regulations governing the conduct of adjudicatory hearings, making it much more difficult for the public to challenge license applications and agency rules and regulations.<sup>9</sup> The new rules sets strict deadlines and standards that must be met for a legal challenge to NRC actions, and they deny intervening parties the right to an on-the-record hearing in reactor licensing proceedings, eviscerating the public's role in such actions.

Under the Energy Policy Act of 1992, the NRC revised its reactor licensing process, splitting it into two stages: one for permitting a specific site, and another for licensing construction and operation of a reactor. This artificial licensing division prevents the public from raising important safety concerns early in the licensing process.

The NRC has also proposed a rule that would greatly broaden the scope of nuclear industry information that would be restricted from public access.<sup>10</sup> Ostensibly designed to secure information that could be employed illicitly by saboteurs, the rules are written so broadly that virtually any information even tangentially related to security may be withheld from the public, including engineering and safety analyses and inspection reports on nuclear facilities. Access to such information is critical to public oversight of the safety of nuclear facilities, but if the proposed rule goes into effect, the public will be left in the dark.

### REFERENCES:

- <sup>1</sup> U.S. Nuclear Regulatory Commission, Office of the Inspector General, “OIG 2002 Survey of NRC's Safety Culture and Climate,” OIG-03-A-03, Dec. 11, 2002.
- <sup>2</sup> Hubert J. Miller, U.S. Nuclear Regulatory Commission, letter to E. J. Ferland, Public Service Enterprise Group, July 30, 2004.
- <sup>3</sup> U.S. Nuclear Regulatory Commission, Office of the Inspector General, “Event Inquiry: NRC's Regulation of Davis-Besse Regarding Damage to the Reactor Vessel Head,” Case No. 02-03S, Dec. 30, 2002.
- <sup>4</sup> U.S. General Accounting Office, *Nuclear Regulation: NRC Needs to More Aggressively and Comprehensively Resolve Issues Related to the Davis-Besse Nuclear Power Plant's Shutdown*, GAO-04-415, May 2004.
- <sup>5</sup> Nuclear Energy Institute, May 10, 2005 <<http://www.nei.org/index.asp?catnum=3&catid=14>>.
- <sup>6</sup> Nuclear Energy Institute, “Approved Power Uprates (1977-2004),” March 2004 <[http://www.nei.org/documents/Approved\\_Power\\_Uprates\\_2004.pdf](http://www.nei.org/documents/Approved_Power_Uprates_2004.pdf)>.
- <sup>7</sup> U.S. Nuclear Regulatory Commission, “Status Report on Power Uprates,” SECY-04-0104, June 24, 2004: 4.
- <sup>8</sup> *Ibid.*, Attachment 4.
- <sup>9</sup> U.S. Nuclear Regulatory Commission, “Changes to Adjudicatory Process,” *Federal Register*, Vol. 69, No. 9, Jan. 14, 2004: 2182-2282.
- <sup>10</sup> U.S. Nuclear Regulatory Commission, “Protection of Safeguards Information,” *Federal Register*, Vol. 70, No. 28, Feb. 11, 2005: 7196-7217.

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