PRM-51-10
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From: "Sally Shaw" <acer8sac@comcast.net>
To: <SECY@nrc.gov>
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Subject: Re PRM 51-10

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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Secretary, U.S. Nuclear Regulatory Commission

Washington, DC 20555-0001

ATTN: Rulemakings and Adjudications Staff.

Subject: Comment regarding Massachusetts Attorney General's Petition for Rulemaking to Amend 10 CFR Part

Docket No. PRM-51-10

FR Doc. E6-18363 Filed 10-31-06; 8:45 am

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Dear Public Servants:

I support the Massachusetts Attorney General's petition for rulemaking to rescind the NRC's finding that environmental impacts of spent reactor fuel pool storage are insignificant. I agree with the petitioner's request, and ask that the Commission

a.. consider as new and significant information the National Academy of Sciences April 2005 report on Safety and Security of Commercial Spent Nuclear Fuel Storage, along with other reports referenced below.
b.. rescind the waste confidence rule which indefinitely postpones NRC's responsibility to see that waste is stored as safely as humanly possible while a longer term solution is sought. (Given Ed McGaffigan's recent comments on the likelihood of Yucca Mountain being that solution, the NRC must act now to begin to mitigate the potential for disastrous contamination of our environment and human communities.)
c.. order that any NRC licensing decision that approves high-density spent fuel pool storage at a nuclear power reactor or other facility must require the creation of an environmental impact statement ("EIS") addressing (i) the environmental impacts of high density pool storage of spent fuel at that nuclear reactor and (ii) provide a reasonable array of alternatives for avoiding or mitigating those impacts, as per the recent Supreme Court Ruling in the San Luis Obispo Mothers for Peace case.

It is important to allow the public process to air the issues and bring out the facts involved in improving security of spent nuclear fuel and its contaminated coolant stored at reactors all over the country for the forseeable future. The MA Attorney General clearly has standing in the Entergy Vermont Yankee relicensing to represent the interests of Massachusetts residents in the EPZ and beyond. MA citizens would be horribly affected by an accidental or malicious loss of water at Vermont Yankee's spent fuel storage pool, the type clearly singled out by the NAS in their report on spent fuel security. It would be negligent to suppress the MA AG's testimony and prevent its public airing. If your rules for studying impacts of relicensing do not include the dangers of spent fuel, they need to be changed.
I incorporate into my comments the following synopsis of the NAS report appended below. I sincerely hope the NRC will honor the Massachusetts Attorney General's petition and provide the country with the necessary protection from spent fuel disasters by taking seriously the terrorist threat and requiring reactor owners to store the fuel in the safest possible manner on site, such as Hardened On Site Storage. Given the enormous consequences of a release of radiation from spent fuel storage, there should be a moratorium on creating more high level radioactive spent fuel and its contaminated coolant until the safe storage problem is solved. Please incorporate also by reference the following reports:

Alvarez, Robert, J. Beyea, K. Janburg, J. Kang, E. Lyman, A. Macfarlane, G. Thompson, F.N. von Hippel.

Template = SECY-067

SECY-02

2003. Reducing hazards of stored spent power reactor fuel in the United States. Science and Global Security, 11:1-51.

Thompson, Gordon. 2003. Robust storage of spent nuclear fuel: a neglected issue of homeland security. Institute for Resource and Security Studies, 27 Ellsworth Ave. Cambridge, MA 02139 USA. (attached).
Thank you for your careful consideration of the Massachusetts Attorney General's petition and the public's concerns.

Sincerely,

Sally Shaw

Gill, MA

Public Report, National Academy of Sciences, April 2005

Report's Highlights, Compiled by the Nuclear Security Coalition

The U.S. Congress asked the National Academies to analyze the safety and security of commercial spent nuclear storage in the United States. Highlights of the report follow. You can access the report at: http://www.nap.edu/books/0309096472/html/

NAS REPORT: REACTOR FUEL POOLS ARE VULNERABLE TO TERRORISM

1. TERRORIST ATTACKS ON SPENT FUEL POOLS POSE A REAL THREAT

. "Terrorists view nuclear power plant facilities as desirable targets because of the large inventories of radionuclides they contain. The committee believes that knowledgeable terrorists might choose to attack spent fuel pools because:

. "(1) at U.S. commercial nuclear power plants, these pools are less well protected structurally than reactor cores;

. "(2) they typically contain inventories of medium and long-lived radionuclides that are several times greater than those in individual reactor cores." p. 36

. "A loss-of-pool-coolant event resulting from damage or collapse of the pool could have severe consequences." p. 49

2. SUCCESSFUL ATTACK COULD HAVE SIGNIFICANT EFFECTS FOR THE PUBLIC

An attack on the spent fuel pool could lead to a zirconium cladding fire resulting in large amounts of radioactive material spreading hundreds of miles.

. "Such fires would create thermal plumes that could potentially transport radioactive aerosols hundreds of miles downwind under appropriate atmospheric conditions." p. 49

. "Finding 3B -. a terrorist attack that partially or completely drained a spent fuel pool could lead to a propagating zirconium cladding fire and the release of large quantities of radioactive materials to the environment. Details are provided in the committee's classified report." p. 49

. "The excess cancer estimates . to between 2,000 and 6,000 cancer deaths" p. 50

3. GE BOILING WATER MARK I & MARK II UNITS - MOST VULNERABLE

Vulnerability to attack differs and is site specific; GE Boiling Water Mark I and Mark II Units are most

vulnerable to attack.

. "The spent fuel pool, (GE Mark I BWR reactors) is located in the reactor building well above ground level. Most designs have thin steel superstructures. The superstructures and pools were not, however, specifically designed to resist terrorist attack." p. 41

. "The vulnerability of a spent fuel pool to terrorist attack depends in part on its location with respect to ground level as well as its construction. Pools are potentially susceptible to attacks from above or the sides depending on their elevation ..." p. 43

4. NAS DISAGREES WITH NRC OVER AGENCY'S RESPONSIBLITY FOR SECURITY

. "To the committee's knowledge, there are currently no requirements in place to defend against the kinds of larger-scale, premeditated, skillful attacks that were carried out on September 11, 2001,

. Staff from the NRC and representatives from the nuclear industry repeatedly told the committee that they view detecting, preventing, and thwarting such attacks as the federal government's responsibility." p. 47

. ".additional work on specific issues is needed urgently.The work to date . has not been sufficient to adequately understand the vulnerabilities and consequences." p. 47

ACTIONS TO PROTECT THE PUBLIC ARE NEEDED

5. IMMEDIATE ACTION IS NEEDED TO REDUCE LIKELIHOOD OF FUEL FIRE

. "Finding 3C: It appears to be feasible to reduce the likelihood of a zirconium fire following the loss-of-pool-coolant event using readily implemented measures. The following measures appear to have particular merit:

. "Reconfiguring the spent fuel pools (i.e. redistribution of high decay heat assemblies so that they are surrounded by low decay-heat assemblies) to more evenly distribute decay heat loads.

. "Limiting the frequency of offloads of full reactor cores into the spent fuel pools, requiring longer shut downs of the reactor before any fuel is offloaded, and providing enhanced security when such offloads must be made.

. "Development of a redundant and diverse response system to mitigate loss-of-pool-coolant events. Any mitigation system, such as a spray cooling system, must be capable of operation even when the pool is drained (which would result in high radiation fields and limit worker access to the pool) and the pool or overlying building, including equipment attached to the roof or walls, are severely damaged." p. 6, 57

. "The (spray cooling system) second measure . may not be needed at all plants, particularly in plants in which the spent fuel pools are located below grade or are protected from external line-of-sight attacks by exterior walls and other structures." p. 59

6. DRY CASK STORAGE IS LESS VULNERABLE BUT NEEDS IMPROVEMENT

. "Finding 4D: Dry cask storage for older, cooler spent fuel has two inherent advantages over pool storage:

. "It is a passive system that relies on natural air circulation for cooling; and it divides the inventory of that spent fuel among a large number of discrete, robust containers. These factors make it more difficult to attack a large amount of spent fuel at one time and also reduce the consequences of such attacks." p. 8

. Findings 4A:"All storage cask designs are vulnerable to some types of terrorist attacks, but the quantity

of radioactive material releases predicted from such attacks is relatively small." p. 7

7. DRY CASKS CAN BE IMPROVED TO REDUCE VULNERABILITY

. "Recommendation: "The Nuclear Regulatory Commission should consider using the results of the vulnerability analyses for possible upgrades of requirements in 10 CFR 72 for dry casks, specifically to improve their resistance to terrorist attacks." p. 7

. ". simple steps that could be taken to reduce the likelihood of releases of radioactive material from dry casks in the event of a terrorist attack.

. "Additional surveillance could be added to dry cask storage ... to detect and thwart ground attacks.

. "Certain types of cask systems could be protected against aircraft strikes by partial earthen berms. Such berms also would deflect the blasts from vehicle bombs.

. "Visual barriers could be placed around storage pads to prevent targeting of individual casks by aircraft or standoff weapons. These would have to be designed so that they would not trap jet fuel in the event of an aircraft attack.

. "The spacing of vertical casks on the storage pads can be changed, or spacers (shims) can be placed between ... casks, to reduce the likelihood of cask-to-cask interactions in the event of an aircraft attack.

. "Relatively minor changes in the design of newly manufactured casks could be made to improve their resistance to certain types of attack scenarios." p. 68

8. EARLY MOVEMENT OF FUEL TO DRY STORAGE CAN REDUCE RISK FROM A TERRORIST ATTACK

. "Finding 4E: Depending on the outcome of plant-specific vulnerability analyses described in the .classified report, the Nuclear Regulatory Commission might determine that earlier movements of spent fuel from pools into dry cask storage would be prudent to reduce the potential consequences of terrorist attacks on pools at some commercial nuclear plants. . In fact, there may be some commercial plants

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that, because of pool designs or fuel loadings, may require some removal of spent fuel from their pools." p. 8

URGENT ANALYSES IS NEEDED

9. CONCERN OVER NRC'S SLOW PACE.

. ". the Nuclear Regulatory Commission's analyses of spent fuel storage vulnerabilities have not yet been completed and actions to reduce vulnerabilities . have not yet been taken. Moreover, some important additional analyses remain to be done. The slow pace in completing this work is of concern given the enormous consequences as described elsewhere in this report" p. 75

10. INDEPENDENT ANALYSIS IS NEEDED:

. "Finding 2C Recommendation: "Although the committee did not specifically investigate the effectiveness and adequacy of improved surveillance and security measures for protecting stored spent fuel, an assessment of current measures should be performed by an independent organization." p. 5, 36

11. PLANT SPECIFIC ANALYSES ARE URGENTLY NEEDED:

. "... The potential vulnerabilities of spent fuel pools to terrorist attacks are plant-design specific. Therefore specific vulnerabilities can only be understood by examining the characteristics of spent fuel storage at each plant. As described in the classified report,

. "there are substantial differences in the designs of PWR and BWR spent fuel pools. . In addition, there are plant-specific differences among BWRs and PWRs that would increase or decrease the vulnerabilities of the pools to various kinds of terrorist attacks, making generic conclusions difficult." p.6, 58

12. ANALYSES UNDERTAKEN BY NRC TO UNDERSTAND RISKS FROM POOL FIRES

. "Finding 3E: The NRC and independent analysts have made progress in understanding some vulnerability of spent fuel pools to certain terrorist attacks and the consequences of such attacks for releases of radioactivity to the environment. However, additional work on specific issues is needed urgently . The work to date . has not been sufficient to adequately understand the vulnerabilities and consequences." p. 6

. "Recommendation: The Nuclear Regulatory Commission should undertake best estimate analyses to more fully understand the vulnerabilities and consequences of loss-of-pool-coolant events that could lead to a zirconium cladding fire.

. "Based on these analyses, the Commission should take appropriate actions to address any significant vulnerabilities identified. The committee provides details on additional analyses that should be carried out in the classified report." p. 6, 58

13. NRC ANALYSES SHOULD ADDRESS:

. "To what extent would such attacks damage the spent fuel in the pool, and what would be the thermal consequences of such damage?

. "Is it feasible to reconfigure the spent fuel within pools to prevent zirconium cladding fires given the actual characteristics (i.e., heat generation) of spent fuel assemblies in the pool, even if the fuel were damaged in an attack? .

. "In the event of a localized zirconium cladding fire, will such rearrangement prevent its spread to the rest of the pool?

. "How much spray cooling is needed to prevent zirconium cladding fires and prevent propagation of such fires?" p. 59

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14. ANALYSES MUST ACCOUNT FOR VARIATIONS IN SPENT FUEL POOL DESIGNS

. "Sensitivity analyses should be undertaken to account for the full range of variation in spent fuel pool designs (e.g., rack designs, capacities, spent fuel burn-ups and ages) at U.S. commercial nuclear power plants." p. 59

NRC'S SECRECY UNDERMINES PUBLIC SAFETY

15. NRC'S SECURITY RESTRICTIONS HINDERING PROGRESS

. "Finding 5A: Security restrictions on sharing of information and analyses are hindering progress in addressing potential vulnerabilities of spent fuel storage to terrorist attacks." p. 77

. "The Commission staff declined to provide a formal briefing to the committee on the DBT for radiological sabotage, asserting that the committee did not have a need to know this information." p. 31

. "The Nuclear Regulatory Commission should improve the sharing of pertinent information . with nuclear power plant operators and dry cask storage system vendors on a timely basis." p. 8

16. INCLUSION OF THE PUBLIC IS ESSENTIAL

. "The . public is an important audience for the work being carried out to assess and mitigate vulnerabilities to spent fuel storage facilities. While it is inappropriate to share all information publicly, more constructive interaction with the public and independent analysts could improve the work being carried out, and also increase confidence in the Nuclear Regulatory Commission and industry decisions and actions to reduce the vulnerability of spent fuel storage to terrorist threats" p.

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