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Date: 7/29/05 11:40PM
Subject: NIRS Supplemental Reply to Director's Decision June 29, 2005

Greetings,

Attached please find the supplemental reply by NIRS to NRC Director's Decision of June 29, 2005 regarding the August 10, 2004 Emergency Enforcement Petition (10 CFR 2.2206)

Paul Gunter, NIRS

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July 29, 2005

Jim Dyer, Director
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Nuclear Information and Resource Service Supplemental Reply to NRC Director's Decision Dated June 29, 2005 for the Nuclear Security Coalition Emergency Enforcement Petition (10 CFR 2.206) Dated August 10, 2004 Regarding the Structural Vulnerability of the GE Boiling Water Reactor MARK I & II Spent Fuel Pools

Mr. Dyer:

Nuclear Information and Resource Service, hereafter referred to as NIRS, submits its supplemental reply a petitioner addressing the Proposed Director's Decision dated June 29, 2005 regarding the Nuclear Security Coalition Emergency Enforcement Petition (10 CFR 2.206), hereafter referred to as petitioners, requested on August 10, 2004 which focused on the structural vulnerability of 32 "spent" nuclear fuel storage ponds for high-level radioactive waste generated in the General Electric Boiling Water Reactor MARK I and II units (GE BWR).

NIRS fully endorses and incorporates the comments of Nuclear Security Coalition July 29, 2005 Reply to the Director's Decision. NIRS fully endorses and incorporates the comments of Pilgrim Security Watch Supplemental Reply dated July 29, 2005 to the Proposed Director's Decision.

Furthermore, NIRS submits the following in reply:

Since the August 10, 2004 filing The National Academy of Science completed an independent study as commissioned by Congress on the "Safety and Security of Commercial Spent Fuel Storage" and on April 03, 2005 released a public version of its report redacted of safeguards and classified information.¹ The study as publicly reported evaluated both onsite high-level nuclear waste storage system for Pressurized Water Reactors and the two unit Dresden nuclear generating station in Morris, Illinois. Both Dresden units are GE BWR MARK I designs the subject of the emergency enforcement petition.

¹ "Safety and Security of Commercial Spent Nuclear Fuel Storage," Committee on the Safety and Security of Commercial Spent Nuclear Fuel Storage, Board of Radioactive Waste Management, Division on Earth and Life Studies, National Research Council of The National Academies, Public Report, April 2005.

A genuine and unresolved dispute now exists between the Commission and the independent report requested of the National Academy of Sciences by Congress that specifically regards the facts and requested actions of the August 10, 2004 petition. This unresolved dispute is documented in the March 2005 US Nuclear Regulatory Commission Report to Congress on the National Academy of Sciences Study on the Safety and Security of Commercial Spent Nuclear Fuel Storage and its cover letter authored by Commission Chair Nils Diaz. Chairman Diaz states that NRC *“identified a number of areas of disagreement with the NAS Committee’s conclusions.”*² Commission Chairman Diaz further states *“The NRC staff also disagreed with some NAS recommendations and indicated its conclusion that they lacked a sound technical basis. The NAS finding that earlier movement of spent fuel from pools into dry storage would be prudent is one such example.”*³

Another example of a genuine and unresolved dispute exists with the Commission position that “SFPs (Spent Fuel Pools) are extremely robust structures that are designed to safely contain the SNF (Spent Nuclear Fuel) under a variety of normal, off-normal, and hypothetical accident conditions (e.g. loss of electrical power, floods, earthquakes, or tornadoes.”⁴ Contrast the NRC position with the NAS position *“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.”*⁵ The NAS report further states *“The vulnerability of a spent fuel pool to terrorist attack depends in part on its location with respect to ground level as well as construction. Pools are potentially susceptible to attacks from above or the sides depending on their elevations...”*⁶

The Proposed Director’s Decision fails to recognize and acknowledge this dispute and wrongly presumes the NRC position to be correct without any explanation. This is an unreasonable position on the part of NRC. Furthermore, NRC then rejects NAS recommendations germane to the requested actions of the petition and fails to take appropriate actions with regard to the fact that GE BWR fuel storage systems are structurally vulnerable to attack as identified in the NAS report.

In identifying the structural vulnerability from elevated nuclear waste storage pools in the GE BWR, the NAS report also identifies the increased risk to public health and safety associated with the consequence of a irradiate fuel pool drain down and resulting nuclear waste fire. *“Such fires would create thermal plumes that could potentially transport radioactive aerosols hundreds of miles downwind under appropriate atmospheric conditions,”* states the report.⁷

Therefore, though disputed by the Commission, the petitioners’ structural, technical and public health and safety concerns raised as the basis for the emergency enforcement actions are now independently documented by the National Academy of Sciences report. The report makes a number of recommendations which the petitioners’ recognize as satisfying, in part, the requested action for a six month study. The National Academy report establishes that the vulnerability and associated risk from radiation dose consequence from a high-level radioactive waste fire from a fuel pool

² Letter from Nils Diaz, US NRC, to Senator Pete Domenici, , Subcommittee on Energy and Water Development, Committee on Appropriations US Senate, March 14, 2005, p. 1

³ Ibid, p. 1

⁴ US Nuclear Regulatory Commission Report to Congress on the National Academy of Sciences Study on the Safety and Security of Commercial Spent Nuclear Fuel Storage, US NRC, March 2005, p.2.

⁵ NAS report, p.47

⁶ NAS report, p. 43

⁷ NAS report, p. 49.

drain down is site-specific and depends in part on the location and elevation of the fuel storage system.

Therefore, in addition to the Dresden nuclear power station, site specific evaluations for the additional 30 units still need to be conducted in concert with public hearings to evaluate the degree of vulnerability and dose consequence of these remaining. The fact that the NAS report provides a level of detail of structural vulnerability and consequence without breaching safeguard and classified information provides a model and threshold for the remaining site specific evaluations that need to be done with the involvement of each site specific reactor community.

Simply stated, this unresolved dispute directly effects the petition's requested actions as supported by the findings and recommendations of the National Academies report with regard to the GE BWR to include;

- a) *"That successful terrorist attacks on spent fuel pools are possible";*
- b) *"If such an attack leads to propagating a zirconium fuel cladding fire, it could result in the release of large amounts of radioactive material";*
- c) *"The vulnerability of a spent nuclear fuel pool to terrorist attack depends in part on its location and with respect to ground level. Spent nuclear fuel pools are potentially susceptible to attacks from above or the sides depending on their elevation with respect to grade and the presence of surrounding shielding structures."*⁸

As further evidence of the NRC dispute to these NAS findings, NRC in its "Report to Congress on the National Academy of Sciences Study on the Safety and Security of Commercial Spent Nuclear Fuel Storage," March 2005, states in the section Reactor Site and Spent Fuel Pool Storage; *"Taken as a whole, these (fuel storage) systems, personnel, and procedures provide reasonable assurance that public health and safety, the environment, and the common defense and security will be adequately protected."*⁹ The Director's Decision further states in summary *"the NRC, other agencies of the Federal government, the local governments, and the licensees have taken comprehensive and in-depth actions to enhance protection of these facilities in a manner consistent with NRC's defense-in-depth philosophy. These actions have significantly improved nuclear plant security. Therefore, the intent of the six-month study requested by the Petitioners has been achieved. Accordingly, the Petitioners' request has, in effect, been granted."*¹⁰

While requested action for a study on the Dresden BWR units may have actually been fulfilled by the NAS report, it only underscores the need for the site specific studies as requested by the petition. The proposed Director's Decision does not address this dispute with either the NAS and the August 10, 2004 petition.

Therefore, petitioners find the Director's Decision deficient and request that the Commission grant the identified enforcement action for the additional site-specific studies.

⁸ NAS report, p. 43

⁹ "U.S. Nuclear Regulatory Commission Report to Congress on the National Academy of Sciences Study on the Safety and Security of Commercial Spent Nuclear Fuel Storage," US NRC, March 2005, p. 4, Attachment, to Commission Chairman Nils Diaz, US NRC, to Senator Pete Domenici, Subcommittee on Energy and Water Development, Committee on Appropriations, United States Senate, March 14, 2005.

¹⁰ Ibid, p. 6

As regards the Director's Decision blanket denial of release of pertinent information in public forums pertaining to public health, safety and security and the structural vulnerability of the GE BWR spent nuclear fuel storage system, the agency states "*the NRC assessments of BWR structural vulnerabilities, including the methodology employed and the results, are classified as national security information pursuant to Executive Order 12958, as amended on November 1999 and March 2003. Public release of national security information is prohibited pursuant to 10 CFR 95.35.*"¹¹

The petitioners are aware that the Commission initially treated the release of all pertinent non-classified information in the public version of the NAS report with a similar security blanket denial. "*The NRC has informed the NAS Committee and NAS management that the proposed NAS reports provided to NRC for review have not satisfied that requirement since the reports and their contents were inappropriate for public release.*"¹²

For example, in the publicly available attachment to his March 14, 2005 letter to Congress in response to NAS efforts to release its public version of its report, Commissioner Nils Diaz determined NAS Finding 3B in the yet unpublished public version as "classified at the secret level."¹³ In reference to the suppressed NAS Finding 3B, NRC states "*The NRC has performed additional analysis and, in general, considers the likelihood of a zirconium fire capable of causing large releases of radiation to the environment to be extremely low.*"¹⁴

Finding 3B as it subsequently appeared in NAS public version was far more revealing and provide further evidence of the genuine dispute. As the NAS finding states, "*The Committee finds that, under some conditions, 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.*"¹⁵ Contrary to the NRC analysis and pertinent to the public's understanding of the real risks and consequences of an irradiated fuel fire, NAS determined "*It is not possible to predict the precise magnitude of such releases because the computer models have not been validated for this application.*"¹⁶

In this case, the NRC objection and suppression of information was inappropriate where the NAS public version provided a balance in its finding as to what was pertinent to public knowledge as non-classified and non-sensitive technical information and a level of detail that should appropriately be released for public knowledge.

NIRS contends that in this example NRC attempted to conceal the dispute between the agency (no significant release of radioactivity from a fuel pool drain down and zirconium fire is possible) and the NAS finding (a large release of radioactivity as the result of a zirconium fire is possible and models have not been developed to project its magnitude with a significant degree of confidence) rather than protect safeguards information from falling into the hands of would be terrorists.

The petitioners contend that the National Academies public report which includes the evaluation of the Dresden GE BWR provides a clear and established baseline for the

¹¹ Ibid , p 7

¹² Letter from Nils Diaz, Chairman US NRC, to Senator Pete Domenici, March 14, 2005, p. 1

¹³ Ibid, Diaz letter, p. 1

¹⁴ Ibid, Diaz letter, Attachment, p. 21

¹⁵ Ibid, NAS Report, Finding 3 B, p. 57

¹⁶ Ibid, NAS Report, Finding 3B, p. 57

public release of non-classified information pertinent to site-specific evaluations and public hearings. This same baseline can be used for or the release of non-classified site specific information of the remaining GE BWR units at subsequent public hearings either held by NRC, appropriate state agencies or publicly sponsored events.

Furthermore, the Proposed Director's Decision states that the petitioners do not present any new information that could alter the position already expressed by NRC Chairman Nils Diaz expressed in his March 14, 2005 letter to Senator Pete Domenici regarding the National Academy of Sciences (NAS) study on the safety and security of commercial spent nuclear fuel. Chairman Diaz states "Accordingly, the technical matters discussed in Chairman Diaz's March 14, 2005 letter need no further elaboration in this Director's Decision."¹⁷

The petitioners disagree with the Director's Decision.

Chairman Diaz's letter of March 14, 2005 was written and released prior to the public release of NAS report on April 03, 2005. The Academy publicly reveals a number of safety and security issues regarding current spent nuclear fuel storage that remain unresolved by the Chairman's letter and the Proposed Director' Decision. The petitioners supplemented their petition with evidence of this clear dispute between NRC and NAS as support for the requested enforcement actions.

a) The Chairman states in his letter, that the NAS Committee *"has identified some scenarios that are unreasonable. The NRC staff also disagreed with some NAS recommendations and indicated its conclusion that they lacked a sound technical basis."*¹⁸ Chairman Diaz offers *"The NAS finding that earlier movement of spent fuel from pools into dry storage would be prudent is one such example."*¹⁹

Specifically, the NAS report states *"The spent fuel pool, (GE Mark I BWR) is located in the reactor building well above ground level. Most designs have thin steel superstructures. The superstructures and pools were not, however, designed to resist terrorist attacks."*²⁰ The report goes on to state *"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 and the presence of surrounding shielding structures. Pools are potentially susceptible to attacks from above or the sides depending on their elevation with respect to grade and the presence of surrounding shielding structures."*²¹

The vulnerability identified by the NAS public version of its report is supported by the earlier NRC "Technical Study on Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," January 18, 2001. The NRC technical study states at Section 3.5.2 Aircraft Crashes *"Mark-1 and Mark-II secondary containments generally do not appear to have any significant structures that might reduce the likelihood of aircraft penetration, although a crash into 1 of 4 sides of a BWR secondary containment may be less likely to penetrated because other structures are in the way of the aircraft."*²²

¹⁷ Letter from Chairman Nils Diaz, US NRC, to Senator Pete Domenici, March 14, 2005, ML050280428.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ "Safety and Security of Commercial Spent Nuclear Fuel Storage," Public Report, National Academy of Sciences, April 2005, p. 41.

²¹ Ibid., p. 43.

²² "Technical Study on Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," January 18, 2001, US NRC, p. 3-23.

The same NRC technical study on fuel pool accident risks projects significant offsite radiation dose consequences from a zirconium cladding fuel fire on the order of 26,800 cancer fatalities out to 500 miles.²³ Similarly, the NAS report identifies significant radiation dose consequences from a zirconium cladding fuel fire.²⁴

Neither the Chairman's letter nor the Director's Decision have provided any explanation on a clear contradiction that exists between current claims of containment robustness and the identified vulnerability in NRC's January 14, 2001 technical study. Furthermore, neither the Commission nor the Proposed Director's Decision provide any risk differential between the identified vulnerability of an elevated BWR spent nuclear fuel pool and a PWR irradiated fuel storage pool as identified by the NAS report.

NIRS contends that the level of dispute between the NAS report and NRC report to Congress on the report are too great and unresolved to be used as any bases for dismissing the petitioners' requested enforcement action.

NIRS further contends that the level of contradiction between the current NRC claims of robust containment for the GE BWR and NRC's January 14, 2001 technical study finding of no significant structures to prevent aircraft penetration are too stark to be used as a bases for dismissal of the petitioners' requested enforcement action.

NIRS, therefore, asserts that in line with the agency's mandate to prioritize public health and safety the prudent and reasonable course of action is for NRC to grant the requested enforcement actions of the August 10, 2004 petition.

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²³ Ibid, Table A4-7 "Mean Consequences in Base Case" p. A4-9

²⁴ NAS report, p. 50