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2.206 - Dry Cask Storage of High-Level Nuclear
Waste at James A. Fitzpatrick

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CITIZENS AWARENESS NETWORK and New York Public Interest Research Group (NYPIRG)

February 21, 2002

Mr. William Travers
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attn:
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PETITION FOR ENFORCEMENT ACTION AND DEMAND FOR INFORMATION (10 CFR § 2.206) WITH REGARD TO LACK OF REGULATORY COMPLIANCE INVOLVING DRY CASK STORAGE OF HIGH-LEVEL NUCLEAR WASTE AT JAMES A. FITZPATRICK

I. INTRODUCTION

In the interest of national security and public and worker health and safety, Citizens Awareness Network (CAN) and the New York Public Interest Research Group (NYPIRG) petition the staff of the Nuclear Regulatory Commission pursuant to 10 CFR § 2.206 to order Entergy Nuclear Operations and Entergy Nuclear FitzPatrick (collectively "Entergy") to suspend the dry cask storage program at the James A. FitzPatrick reactor. If allowed to proceed with this program, Entergy will be in violation of NRC regulations on the storage of irradiated nuclear fuel and high-level radioactive waste in dry casks, physical protection of irradiated fuel and licensed activities (§§ 72.51, 72.55), and regulations limiting workers' exposure to radiation (§ 50, Appendix I), including an ALARA review. Adequate protection of public and worker health and safety dictates that these problems be fully resolved before Entergy is allowed to transfer FitzPatrick's irradiated fuel into dry casks. In addition, CAN and NYPIRG hereby submits a Demand for Information and requests that all documents and information filed in relation to the selection of storage casks and the implementation of dry storage at FitzPatrick be put on the docket for public inspection.

As detailed in this petition, Entergy has made significant changes to the HI-STORM 100 casks, but has neither applied for nor received permission for these modifications to the NRC-licensed design. Therefore, there is strong reason to believe that these site-specific design changes have been made in violation of NRC regulations and rulings, the Certificate of Compliance for the cask design, and the General License for the Storage of Spent Fuel at Power Reactor Sites (§ 72, Subpart K). The NRC must conduct an investigation to

THE EXPERIMENT IS OVER

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determine whether Entergy has deliberately circumvented the appropriate technical and regulatory review required to protect worker and public health and safety and the environment. NRC should also conduct a review to determine whether NRC staff in the Spent Fuel Project Office are complicit or misguided in permitting design changes to these casks without submission of a license amendment.

II. BACKGROUND

James A. FitzPatrick began commercial operation in 1975. In the mid-1990s, then-owner New York Power Authority anticipated the loss of fuel storage capacity in the irradiated fuel pool by 2006, with loss of full core offload capability by 2002. At some point, NYPA chose the Holtec International HI-STORM 100 cask system, then in the design and licensing review process. At some point, it was discovered that the HI-STORM 100 as designed is too large to fit through the fuel bay door at FitzPatrick. FitzPatrick, Holtec, and NRC were, according to NRC staff in the Spent Fuel Project Office (SFPO), all aware of this problem by the time NRC granted Holtec permission to begin fabrication of three MPC-68 multi-purpose canisters, three HI-STORM 100 overpacks, and one HI-TRAC-125 transfer cask for use at FitzPatrick (conversation with Steve O'Connor, NRC Spent Fuel Project Office). Nevertheless, NRC made an exemption to its rules and permitted Holtec to begin fabrication of dry casks for FitzPatrick under the original design – under the condition that Holtec would have to modify or even discard the casks it was planning to manufacture if NRC did not certify the original cask design.¹ The HI-STORM 100 was not certified until June 1, 2000.

When it granted the exemption, NRC already knew that the cask overpacks would require modification from the original design the agency later approved. Holtec notified the NRC on January 20, 2000 of its intention to begin fabrication. Apparently all three parties – Holtec, FitzPatrick (then NYPA, later Entergy), and the SFPO – anticipated an application by Holtec to amend the eventually certified design for a shorter version of the cask.² Holtec submitted

¹ Condition #5, January 13, 2000 letter from E William Brach, Director, Spent Fuel Project Office, Mr. Brian Gutherman, Licensing Manager, Holtec International.

² January 20, 2000 letter from Holtec informed NRC of its intention to begin fabricating the cask components for FitzPatrick, including a HI-TRAC 125 transfer cask. At a presentation in March 2000, Dr. Andrew Kadak, in his evaluation of FitzPatrick's dry storage program, informed the Oswego County Legislature that FitzPatrick had decided to use the HI-TRAC 100 transfer cask instead of the HI-TRAC 125. However, Holtec had only sought permission to build the HI-TRAC 125 for FitzPatrick. At that time, Dr. Kadak raised concerns about FitzPatrick choice of transfer casks, recommending that FitzPatrick management justify this decision given the increased exposure to workers: "The use of the HI-TRACK 100 versus the 125 ton casks should be carefully evaluated since the HI-TRACK 100 provides almost double the radiation exposure to workers than does the HI-TRACK 125. A compelling case needs to be made to use the HI-TRACK 100 even though the doses for the transfer are projected to be comparable to other maintenance work activities in the plant" (Kadak 12). In December 2000, the NRC held a public meeting in Oswego County, NRC explained that

that application on August 31, 2000, for a design it called the HI-STORM 100S. In May 2001, NRC responded with a Request for Additional Information with about 74 unresolved issues – including the omission of bolts to hold on the overpack lid in case of tip-over. To date, as far as CAN and NYPIRG know, Holtec has neither withdrawn the application, nor resolved all of the issues. NRC has yet to grant the amendment.

FitzPatrick (now owned by Entergy) redesigned and built the casks to load in March 2002. Mr. O'Connor of the SFPO staff indicated that NRC expects that the design changes to the casks are similar to the amended design submitted by Holtec and yet to win approval from the NRC. Among these modifications, according to his understanding, is that Entergy shortened the cask by approximately 18 inches, by eliminating the pedestal on which the fuel canister sits inside the overpack. Mr. O'Connor indicated that Entergy intends to use a lower density of concrete in the overpack than is stipulated in the design basis under the Certificate of Compliance. Mr. O'Connor claimed not to know all of the design changes Entergy made, and he knew no exact details about the issues of which he was aware. This is because the only document that has been filed which indicates there has even been a change in the as-built design of the casks at FitzPatrick is Entergy's July, 2001 application for a rule exemption to change their monitoring procedures to reflect a change in the cask design per 10 CFR 72.48 and 72.212.

However, the only remaining hurdle to Entergy's use of these casks is a final NRC inspection taking place this month, during which Entergy will present its case that the design changes are allowed under the Certificate of Compliance. Our understanding is that NRC will not independently analyze the design changes and whatever computer modeling and testing Entergy has conducted – as the agency would in reviewing a license amendment – but merely review Entergy's analysis that the changes are allowable under § 72.48.

Here the NRC gave FitzPatrick and Holtec permission to build and redesign casks under a design that was not yet approved, expecting that the whole matter would be "grandfathered" in under a license amendment that had not even been submitted at that time, and which has not been approved. Staff in the NRC office with direct regulatory responsibility for ensuring that health and safety and the environment are protected during these activities do not even know the exact details of how Entergy has modified the casks. Despite a series of cost vs. safety compromises, repeated opportunities to inform the public, and clear reason to require a license amendment application and ALARA review, NRC has even failed to provide a minimum amount of assurance that Entergy's activities at FitzPatrick will not pose an increased risk to national security, the community, workers, and the environment. This

the building structure could not withstand the heavier load of the 125-ton cask. CAN is not aware of any documents filed that verify this assertion, and we are confounded as to why FitzPatrick would ask Holtec to fabricate a transfer cask before identifying that limitation. NRC withheld information at this meeting that the casks were, in fact, too large to be moved out of the containment building and modification would be required for the cask to be used.

regulatory mayhem endangers the public health and safety and the ability of the public to have confidence in the NRC's regulatory capacity.

III. PROBLEMS AND SIGNIFICANCE

Although Entergy has compelling financial interests in avoiding the license amendment review process and a thorough evaluation of its selection of dry storage technology, these interests do not relieve Entergy of its primary responsibility to protect the health and safety of workers and the public. These interests are purely financial in nature, and waiting to load the casks will in no way preclude Entergy from operating FitzPatrick or performing other licensed activities:

- if FitzPatrick loses full core offload capacity, it could prolong subsequent maintenance or refueling outages, reducing Entergy revenues and profit margin, and potentially causing the company to incur contract penalties for production shortfalls;
- the HI-STORM cask design is being used as a design basis cask in licensing the Private Fuel Storage facility on the Skull Valley Goshute Reservation in Utah; since Entergy is a member of the PFS consortium, the use of the HI-STORM casks could simplify regulatory approval of both shipment and storage of FitzPatrick's irradiated fuel to the PFS facility; and
- with the HI-STORM 100 casks, which are designed to hold 68 fuel assemblies, Entergy only has to load three casks per operating cycle, potentially saving costs on equipment (casks) and labor; also, with fewer casks, Entergy would require fewer shipments to transport its waste to the Skull Valley storage facility (or presumably Yucca Mountain).

There are significant compromises to national security, worker and public health and safety, and the environment in the selection of the HI-STORM 100, the design changes, and the design of the ISFSI.

- ***Entergy's design changes increase the risk of terrorism.*** Using a lower density concrete increases the vulnerability of the entire cask and the risk of releasing radioactive material to the environment. Also, shortening the casks by eliminating the pedestal means that the lower portion of the canister will be exposed at the four intake vents that penetrate the 29-1/4" thick concrete and steel wall at the base of the overpack. Thus, the fuel canister will have little to no protection at these points. These changes introduce previously unreviewed safety issues regarding a terrorist attack and raise significant ALARA issues regarding worker health and safety.
- ***Entergy's use of the HI-STORM casks does not adequately protect workers.*** The only reason Entergy has offered for its choice of the HI-TRAC 100 transfer cask – as opposed to the HI-TRAC 125 transfer cask, which provides substantially more radiation shielding – is that the reactor building could not support the greater load. CAN and NYPIRG are not aware of any documents or ALARA analyses filed that verify this assertion. Nevertheless, if Entergy used a cask containing fewer fuel

assemblies, it would reduce the amount of radiation exposure and presumably enable Entergy to provide greater shielding to protect workers in the cask loading and fuel transfer process.

- **Entergy's design changes will increase radiation exposure to workers and the environment.** Eliminating the cask pedestal so that the canister is level with the lower vent in-takes will increase the gamma radiation exposure to the workers and the environment. § 72.236(d) requires that "Radiation shielding and confinement features must be provided sufficient to meet the requirements in §§72.104 and 72.106." 72.104(b) requires that "Operational restrictions must be established to meet as low as is reasonably achievable objectives for radioactive materials in effluents and direct radiation levels associated with ISFSI or MRS operations."
- **Entergy's design changes could increase the possibility that the casks will leak.** Shortening the overpack also changes the HI-STORM's primary cooling system – the four vents which run vertically from the bottom to the top of the cask. If the redesigned casks do not provide enough ventilation, they could overheat and damage the casks and/or the fuel rods inside them. This issue is vital to the design of the cask, which is why 10 CFR § 72.236(f) requires that casks be designed (or, presumably, redesigned) "to provide adequate heat removal capacity without active cooling systems."

An overarching concern which increases all of these dangers is that each of the casks is to be loaded with so much radioactive material (68 fuel assemblies). Loading fewer fuel assemblies into each cask – or using a cask that holds fewer fuel assemblies – would reduce the risk to the environment from an accident, leak, or terrorist attack, and it would allow Entergy to provide workers more radiation protection. Furthermore, placing these increasingly vulnerable casks in the current storage area – where there is little or no structural protection against many kinds of terrorism scenarios – is an unnecessary risk to national security and the public health and safety.

The cost savings Entergy stands to profit from by skirting the regulatory process do not outweigh these risks, and do not provide grounds for an exception to the NRC's regulations on worker safety, ALARA standards, dry cask storage, or protection of irradiated nuclear fuel. It is not the NRC's responsibility to protect the licensee from its financial mishaps. It is the NRC's mandate to protect worker and public health and safety and the environment.

IV. REQUESTED ACTIONS

NRC must require Entergy to:

- demonstrate that the proposed fuel storage program presents no increased risks to national security or worker or public health and safety beyond what is contemplated in the certificate of compliance and General License, pursuant to § 72.212(4)-(5);
- submit its proposed design changes for technical review in the form of a license amendment application and seek regulatory approval for them pursuant to § 72.244;

- evaluate its use of the HI-TRAC 100 transfer cask for ALARA standards, per § 50, Appendix I.
- and/or provide more substantial physical and structural protection of the irradiated fuel and ISFSI to satisfy the requirements of § 73.51, 73.55.

If Entergy is unable to demonstrate that the use of the HI-STORM 100 can satisfy these requirements at FitzPatrick, Entergy must be required to demonstrate countervailing and compelling reasons to utilize the HI-STORM 100 at FitzPatrick, as opposed to any other casks certified by NRC.

Under this petition, CAN and NYPIRG also submit a Demand for Information and requests that all documents and information filed in relation to the selection of storage casks and the implementation of dry storage at FitzPatrick be put on the docket for public inspection. Further, CAN and NYPIRG request that the Petition Review Board submit this petition to the Office of the Inspector General for review of the Spent Fuel Project Office's compliance in regard to NRC regulations in terms of design changes, licensing, amendments, exemptions, and ALARA in its permitting process with regard to the use of dry cask storage at FitzPatrick.

Dated: This 21st Day of February 2002.

Respectfully Submitted:



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* T. Judson signs petition on behalf of all petitioners.