December 2, 1994

NOTE TO: Docket File

FROM: Joseph W. Shea, Project Manager /S/ J. Shea
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

SUBJECT: BACKGROUND DOCUMENTS REGARDING POSTULATED LOSS OF SPENT FUEL POOL COOLING EVENTS, SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2

The attached documents were provided by Mr. David Lochbaum to the NRC staff. The documents are related to the staff's ongoing review of spent fuel pool cooling design issues at Susquehanna Steam Electric Station. Attachment 1 is a facsimile from Mr. Lochbaum to Joe Shea of the NRC staff, dated November 22, 1994, that discusses the conclusions of NUREG-0404, "Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel." Attachment 2 is a fascimile from Mr. Lochbaum to Joe Shea of the NRC staff, dated November 29, 1994, that discusses the guidance provided in a letter from Mr. Brian Grimes of the NRC to All Power Reactor Licensees, dated April 14, 1978.

Please place the attached documents in the Susquehanna Steam Electric Station Docket File.

Attachments: As stated

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MO'Brien
JStolz

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NAME	MO'Brien	JShea	JStolz		
DATE	12/1 /94	12/1 /94	12/2/94		

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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Attachments: As stated

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November 22, 1994 1:12pm

FAX MESSAGE

TO: Joe Shea

FROM: Dave Lochbaum

NUMBER OF PAGES: 2

NUREG-0404 Volume 1, "Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel", page ES-9 states:

> *"In the judgement of the staff:*
>
> - *Providing more at-reactor spent fuel storage is adequately covered by existing regulations and regulatory practices."*

We would agree with this staff conclusion, unless (a) non-compliance with these existing regulations is accepted by the staff if it was previously undetected, or (b) the scope of the 'regulatory practices' includes allowing licensees to operate nuclear power facilities outside their design and licensing bases.

I cannot understand how the staff can reconcile its decision on Susquehanna, as announced in the October 25, 1994 meeting and described in the draft Safety Evaluation, with the staff's prior evaluations (NUREG-0404 and NUREG-1353). Both of these substantial staff studies concluded that existing regulations provided reasonable assurance that spent fuel handling and storage posed no undue risk to public health and safety. The Susquehanna decision appears to invalidate those earlier staff conclusions - if, in fact, licensee non-compliance with regulations is going to be accepted so readily by the staff. Both Congress and the public should fully understand that the staff is now preparing, with apparently no apprehensions whatsoever, to throw away the rule book. I can understand revising the rule book and granting exemptions to specific rules, but to simply throw out the rules because a licensee failed to comply with the rules and the staff failed to detect this non-compliance at the time of initial licensing is completely unfathomable. I cannot believe that an organization whose stated charter is to protect the public would take this course of inaction

tivity of a region. The maintenance of the power base for this productivity is important, and nuclear power plants represent an option important to national productivity over the long-term.

A replacement of nuclear generating capacity by coal fired plants could meet this need. Hence, the only real option, if the power base is to be maintained, is to continue generating electricity. Replacement of nuclear with coal fired units will have a more adverse impact on the overall long-term environmental quality of the nation.

5.0 THE IMPACTS OF POSSIBLE ADDITIONAL TRANSPORTATION REQUIREMENTS

Increasing at-reactor spent fuel storage does not in itself involve any additional transportation of spent fuel.

The provisions of away-from-reactor spent fuel storage, assuming offsite locations, could involve an additional transportation step. This could be a significant incremental addition to the transportation requirements of the nuclear industry. However, the environmental impact increment from this spent fuel transportation is insignificant.

6.0 THE NEED FOR MORE DEFINITIVE STANDARDS AND CRITERIA TO GOVERN THE LICENSING OF ONE OR MORE OF THE ALTERNATIVES CONSIDERED

In the judgment of the staff:

- Providing more at-reactor spent fuel storage is adequately covered by existing regulations and regulatory practices.

- There is a need for a more definitive regulatory base for new "storage only" facilities. The present regulations covering the possession of special nuclear materials in an independent spent fuel storage installation (ISFSI) lack specificity for this application. The development of a new regulation, the proposed 10 CFR Part 72, and its augmentation by Regulatory Guides on safety-related aspects of ISFSI licensing actions are planned to meet this need. At present drafts are undergoing internal review by NRC staff.

- The environmental costs of extended spent fuel storage are incrementally small, and are essentially now incorporated in the previously recognized costs assigned to the uranium fuel cycle. Consequently, no modifications to 10 CFR Part 51 §51.20(e), including the S-3 Table, indicating environmental impact summaries are necessary.

7.0 ACCIDENTS AND SAFEGUARDS CONSIDERATIONS

Restrictions on the handling of heavy loads in the vicinity of spent fuel pools imposed on individual nuclear power plants during modifications of their spent fuel storage racks limit the potential consequences of such accidents to values which are not significantly different from the consequences of spent fuel handling accidents reported in the final environmental statement (FES) for each plant.

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November 29, 1994 8:05am

FAX MESSAGE

TO: Joe Shea

FROM: Dave Lochbaum

NUMBER OF PAGES: 2

I ran across an NRC letter signed by Brian K. Grimes dated April 14, 1978 which tranmitted guidance to licensees on the "*type and extent of information needed by the NRC Staff to perform the review of licensee proposed modifications of an operating reactor spent fuel storage pool.*" The guidance covered criticality concerns, seismic concerns, cask drop concerns, and cooling concerns. On page III-2 under the POSTULATED ACCIDENTS heading, item (4) states the postulated accidents shall include "*loss of all cooling systems or flow under the accident conditions, unless the cooling system is single failure proof.*" On page III-4, there is the following text:

> "*Under postulated accident conditions where all non-Category I spent fuel pool cooling systems become inoperative, it is necessary to show that there is an alternative method for cooling the spent fuel pool water. When this alternative method requires the installation of alternative components or significant physical alteration of the cooling system, the detailed steps shall be described, along with the time required for each. Also, the average amount of water in the fuel pool and the expected heat up rate of this water assuming loss of all cooling systems shall be specified.*"

This NRC guidance was dated April 14, 1978 -- many years before the Susquehanna licensing. It referenced the Regulatory Guides and Standard Review Plan sections that we have repeatedly cited as governing. Whether a plant was being initially licensed (e.g. Susquehanna in the early 1980s) or having increased spent fuel storage capacity licensed, the applicable rules should have been the same.

In the recent past, I sent you pages from NUREG-1353 and NUREG-0404 indicating that the staff concluded that existing regulations provided adequate protection. It occurred to me that these conclusions are wrong and this deficiency should be addressed in the NRC's Generic Action Plan. Specifically, consider an operating BWR with 500-800 fuel assemblies in its reactor core. During refueling, as long as a single irradiated fuel assembly remains in the core, Technical Specifications require diesel generator operability, RHR system availability, and generally that an STA be on shift. However, once that last irradiated fuel assembly is removed from the core, the Technical Specifications permit ALL diesel generators to be rendered inoperable for maintenance, ALL RHR pumps to be taken out of service, and the STAs can usually terminate shift coverage. A considerable decay heat load still exists in the spent fuel pool, cooled by the non-safety related, non-Class 1E, non-seismic, non-single failure proof fuel pool cooling system. Whatever the reason for requiring diesel generators and RHR with a single irradiated fuel assembly in the core, that reason does not magically disappear when that bundle is moved to the spent fuel pool. The reason does not disappear, but the requirements do. Therefore, the existing regulations are not adequate.