

December 7, 2005

MEMORANDUM TO: Gene Suh, Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Maitri Banerjee, Project Manager/*RA*/
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Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: REPORT OF PROJECT MANAGER SITE VISIT- DRESDEN STEAM
DRYER LICENSING ISSUES (TAC NOS. MC0875 AND MC0876)

During the U.S. Nuclear Regulatory Commission (NRC) review of Dresden Nuclear Power Station (DNPS) Units 2 and 3 steam dryer cracking events in the past two years, the staff identified three issues. It was concluded that the Dresden Project Manager (PM) would review the following three items during the next site visit, and document the disposition of the issues in the PM's site visit report. These questions were sent to Exelon via e-mail on July 12, 2005. The site visit occurred during August 15-18, 2005.

- A. Does Exelon's planned use of the acoustic circuit analysis method constitute a change to the facility or procedures per Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.59? In addition, does Exelon plan to replace an existing method of evaluation described, outlined or summarized in the updated final safety analysis report (UFSAR) as updated in accordance with the 10 CFR 50.71 requirements with the acoustic circuit analysis methodology?

Response:

The design and licensing basis function of the steam dryer, as described in the DNPS UFSAR for reactor internals, is to maintain its structural integrity, provide for adequate distribution of coolant flow within the reactor, and preclude failure and discharge of any parts through the main steamline that could block a main steamline isolation valve in the event of a steamline break. The DNPS UFSAR does not describe a method of evaluation for the steam dryer. Historically, evaluations performed for structural integrity considered differential pressure loads applied to the dryer. The current approach, while more refined, uses the same considerations to evaluate the dryer, and hence, it does not constitute a departure from the previous method or a change to the UFSAR.

Based on this review, the PM found the licensee's position acceptable.

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- B. In response to Dresden and Quad Cities steam dryer cracking, Exelon had made modifications to strengthen the dryers. These modifications produced additional weight and a different weight distribution which may affect the reactor internal's structural dynamic response to normal operating, seismic and accident loading. Were 10 CFR 50.59 evaluations performed for these modifications and is a revision to the UFSAR needed?

Response:

Structural modifications were installed on both Dresden, Units 2 and 3 steam dryers to improve structural integrity (design and licensing basis function) and overall stiffness, and thus reduce the effects of flow induced vibration loads. Exelon performed a 10 CFR 50.59 screening for these modifications that concluded a detailed 10 CFR 50.59 review was not required. The evaluations concluded that the modifications would have negligible effects on the overall mass of the dryers and on the flow through and around the dryer assembly. The steam dryer design is not described in the UFSAR. The PM reviewed the 10 CFR 50.59 screening evaluations that concluded that the modifications were made to ensure that the steam dryers maintain their design function during all operating conditions. Exelon did not make any changes to the UFSAR as the purpose of the modifications was to restore the dryer's licensing and design basis function and not make any changes to it.

Exelon later identified that the impact of the increased dryer mass and pressure drop to fuel analyses was not evaluated. Action Request 00359129 was initiated on August 2, 2005. A preliminary evaluation of the combined effects indicated that the current operating limits in Units 2 and 3 Core Operating Limits Reports remain applicable, thus demonstrating operability. A more detailed evaluation and any corrective actions will be addressed under Exelon's corrective action program.

The NRC staff found the licensee's analyses acceptable.

- C. Does the licensee consider the statement of limited cracking in their December 10, 2004, letter, to involve a change to the facility as described in the UFSAR? If so, have they performed a 10 CFR 50.59 screening or evaluation to address this change? Does the licensee's evaluation for acceptability of limited cracking consider loading conditions as defined in the UFSAR including design-basis accident conditions?

Response:

Exelon does not consider currently existing limited cracking of the steam dryer to involve a change to the facility as described in the UFSAR. Exelon has performed dryer modifications or repairs to address cracks found unacceptable for maintaining the dryer's design function. 10 CFR 50.59 screening evaluations were performed for these modifications. These evaluations concluded that the modifications did not alter or adversely affect the design function of any structure, system or components as described in the UFSAR. Some cracks were left as-is based on engineering evaluations that they would not adversely affect the steam dryer design functions. Appropriate structural support and loading conditions were considered in these analyses. Exelon continues to perform inspection of the steam dryers including these cracks at refueling outages, and take as-needed corrective action. Exelon plans to replace the dryers at a future refueling outage.

The staff agrees with Exelon's conclusion that findings of limited cracking do not affect the functions of the steam dryers and do not constitute a change to the facility as described in the UFSAR. The NRC staff continues to monitor the licensee's dryer inspection findings and the effect of identified cracks on dryer design and function.

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