April 21, 2010

MEMORANDUM TO: John Lubinski, Acting Director
Division of Reactor Safety
Region II

Roy Caniano, Director
Division of Reactor Safety
Region IV

FROM: Mark Cunningham, Director ***/RA/***
Division of Risk Assessment
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Fred Brown, Director ***/RA/***
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Office of Nuclear Reactor Regulation

SUBJECT: FOLLOW-UP ACTIONS IN RESPONSE TO INSPECTION FINDING OF SUBSTANTIAL SAFETY SIGNIFICANCE AT BROWNS FERRY NUCLEAR POWER PLANT

On April 19, 2010, the NRC issued two final safety significance determinations for fire protection inspection findings at the Browns Ferry Nuclear Power Plant (Browns Ferry). One of the inspection findings dealt with multiple cable separation problems. The NRC determined that this finding had substantial safety significance. This safety significance was greater than identified in previous cases for cable separation problems.

A working group, composed of senior technical staff and Branch Chiefs from the Regions and the Office of Nuclear Reactor Regulation (NRR), was created to thoroughly examine the Browns Ferry situation and to ensure that all the factors that contributed to the inspection finding having substantial safety significance were identified and understood.

The working group identified seven factors that were applicable to Browns Ferry, and one factor that was identified through inspections at Arkansas Nuclear One (Enclosure 1). The working group observed that elevated risk significance required a combination of multiple conditions. Removal of any of the key elements could result in a significant reduction in the calculated risk.

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The working group evaluated whether any other reactor sites with known cable separation issues shared the characteristics that contributed to the safety significance of the Browns Ferry finding. No additional units have as many risk factors as Browns Ferry. Given the need for multiple factors to exist to create a condition involving significant risk, the working group concluded that no additional effort was required for plants with four or fewer risk factors, except when one of those risk factors involved the self-induced isolation of power from safe shutdown equipment (SISBO strategy). Based on this evaluation, the following nuclear power plants were identified for further review:

- Arkansas Nuclear One (5 risk factors)
- Brunswick, Units 1 and 2 (7 risk factors)
- Farley, Units 1 and 2 (6 risk factors)
- Turkey Point, Units 3 and 4 (7 risk factors)
- V.C. Summer (4 risk factors, including the SISBO strategy)

Based on the results of the working group, we have identified the following actions to follow-up on the status of these five sites:

1) Hold a public meeting with the affected licensees to communicate the Working Group's findings about eight risk factors that can lead to elevated on-going risk if not appropriately mitigated. The Division of Inspection and Regional Support (DIRS) in NRR will take the lead to work with the Regions and the Division of Risk Assessment (DRA) in setting this meeting up. The meeting may be in Headquarters or Region II, or multiple meetings may be held, one for each site. At the meeting the NRC will:
   a) Request that each of the affected licensees consider the information developed by the working group and, if appropriate, to make available to the NRC information to update the current status of the working group's understanding of the plant's risk factors.
   b) Request each above licensees to make information available to the NRC that quantifies the current level of risk at their plant. This information should demonstrate the effectiveness of their actions taken with respect to transitioning to a risk-informed fire protection program in accordance with 10 CFR 50.48(c).

2) The Regions are to perform confirmatory activities for items 1.a) and 1.b) above as necessary. NRR will support these activities with inspection guidance, as necessary, and staff support as required.

In addition, NRR will be undertaking three additional efforts:

1) For plants with open or recent licensing actions relating to operator manual actions in response to fires, NRR/DRA will evaluate the exemption requests to determine whether information included in the exemption requests would indicate the presence of five or more risk factors at plants other than the five identified by the Working Group. If any additional plants are identified, they will be handled as described above.

2) NRR/DRA will perform a preliminary review of the risk involved with the use of an Appendix R, Section III.G.3 compliance strategy given the risk information gathered while evaluating the Browns Ferry OMA findings. Based on the review, the staff will recommend further regulatory action as necessary.
3) NRR/DIRS will evaluate the screening criteria used to evaluate manual action feasibility in the Triennial Fire Protection Inspection Procedures.

It is our intent that all actions be completed by the end of Calendar year 2010.

Enclosure:
As stated

2) NRR/DRA will perform a preliminary review of the risk involved with the use of an Appendix R, Section III.G.3 compliance strategy given the risk information gathered while evaluating the Browns Ferry OMA findings. Based on the review, the staff will recommend further regulatory action as necessary.
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Enclosure:
As stated

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DATE	04/13/2010	04/16/2010	04/16/2010	04/20/2010	04/21/10	04/16/2010

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RISK FACTORS

Required entry condition for assessment: known cable separation issues.

1. A large number of Operator Manual Actions (OMAs) used to mitigate cable separation problems.
2. A single fire could affect more than one unit.
3. The use of thermoplastic cable insulation.
4. Problems in documenting cable routing within the plant.
5. A Self-Induced Station Black-Out (SISBO) strategy (isolating all on-site power to prevent damage to equipment in the case of a fire) for fires in areas without cable separation.
6. The OMAs are very complicated, and there is not high confidence that operators would be able to implement them in fire conditions.
7. Mitigation of a fire requires the use of systems from multiple units (electrical or mechanical cross-unit ties).
8. Symptom-based fire response procedures with complex OMAs