

Perry Buckberg - Draft RAI

From: "Ford, Bryan" <BFord@entergy.com>
To: "Perry Buckberg" <PHB1@nrc.gov>
Date: 11/2/2006 8:36 AM
Subject: Draft RAI

Perry,

A couple of weeks ago you sent us a draft RAI 3.6.2-1 (attached with our current draft answer). I have not seen the RAI in a formal letter. Has it been sent? Also I have not seen the requests for clarification for RAIs 2.3.3.9-1 and 2.3.3.9-8. Have they been sent? I looked in ADAMs and could not find them either.

Bryan Ford
508-830-8403

Mail Envelope Properties (4549F45C.559 : 4 : 62809)

Subject: Draft RAI
Creation Date 11/2/2006 8:35:56 AM
From: "Ford, Bryan" <BFord@entergy.com>

Created By: BFord@entergy.com

Recipients

nrc.gov
 OWGWPO01.HQGWDO01
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E6 RAI response for PNPS-10-23-06 (2).doc		38912
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RAI 3.6.2-1

In RAI 3.6.2-1, by letter dated August 14, 2006, the staff requested the applicant to provide a basis document including an aging management program (AMP) for cable connections with the 10 elements or provide a justification for why an AMP is not necessary.

In your response, by letter dated September 13, 2006, you stated that electrical cable connections at PNPS are inspected under the maintenance rule program as directed by Entergy procedures and therefore no aging management program (AMP) for license renewal is required at PNPS.

It should be noted that the current licensing bases for all power plants require compliance with the requirements of the maintenance rule 10 CFR 50.65. The Statements of Consideration for the license renewal rule state: The license renewal rule excludes "active, short-lived structures and components" from an aging management review because of the existing regulatory process, existing licensee programs and activities, and the maintenance rule. The staff's understanding has been that under the license renewal rule, existing programs are not, without some explanation or modification, automatically considered adequate to manage aging effects for license renewal by virtue of being part of the current licensing basis. The Commission formulated the following two principles of license renewal: (1) With the possible exception of the detrimental effects of aging on the functionality of certain plant systems, structures, and components in the period of extended operation and possibly a few other issues related to safety only during extended operation, the regulatory process is adequate to ensure that the licensing bases of all currently operating plants provides and maintains an acceptable level of safety so that operation will not be inimical to public health and safety or common defense and security; and (2) The plant-specific licensing basis must be maintained during the renewal term in the same manner and to the same extent as during the original licensing term.

The 10 CFR 50.24 (a)(3) requires an applicant to demonstrate that the effects of aging, of components such as cable connections defined in 10 CFR 50.24 (a)(1), will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation. To demonstrate that the effects of aging will be adequately managed for license renewal, the staff views that an applicant must identify the program relied upon to manage certain aging effects for cable connections. The aging management program for cable connections acceptable to the staff is provided in GALL AMP XI.E6. This AMP states that the aging management program for electrical cable connections (metallic parts) account for the following stressors: thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation.

ENCLOSURE

Therefore, the staff requests that the applicant either provide a plant-specific AMP with the AMP elements found in SRP-LR, Appendix A.1, Section A.1.2.3 and SRP-LR Table A.1-1 or an AMP consistent with GALL AMP XI.E6. If you still insist an AMP is not required, explain in detail how the existing program will address the above aging effects and provide a detailed discussion of how each of the 10 elements of the program as described in the SRP sections mentioned above is met by the current program. Also, provide supporting documentation to show that the aging management program elements including appropriate tests are implemented currently and will be continued for the extended period of operation. Without such information, it is not apparent that the staff will be able to present a basis for concluding that actions have been or will be taken to manage the effects of aging during the period of extended operation to ensure the functionality of those structures and components.

E6 RAI Response

Effects of Aging Versus Effects of Other Factors Independent of Aging

NUREG-1801, XI.E6 identifies loosening of bolted connections as the only aging effect being managed by this program. Under the aging effect heading in NUREG-1801, Section VI, the table identifies several stressors that are largely unrelated to aging. These stressors are also discussed in the XI.E6 program. As indicated in NEI letter of September 5, 2006, the stressors identified are related to improper design, installation, or maintenance activities, but not aging.

Maintenance Rule Is More than an Aging Management Program

While the stressors identified in NUREG-1801, XI.E6 are independent of aging, they can lead to detrimental effects on electrical connections. Because they are not aging effects, these detrimental effects are operational concerns during the current license term. Hence the maintenance rule program is appropriate to manage these effects since the maintenance rule applies independent of the status of license renewal for a particular nuclear power plant.

As stated in the SOC for license renewal, the maintenance rule requires that licensees monitor the performance or condition of SSCs to provide reasonable assurance that these SSCs are capable of performing their intended functions.

Connections are a unique commodity sub-type, since most connectors are associated with active components, even though alone they may be considered passive components. Connections are different from the majority of passive components in that degradation of the metallic portions of connections is typically revealed during normal operation or periodic testing. Degradation of connections is a different problem than degradation of cable insulation, since degradation of cable insulation is less likely to be directly manifest during normal operation or periodic testing.

The maintenance rule manages detrimental effects on metallic parts of electrical connections by performance monitoring. Each licensee "shall monitor the performance or condition of structures, systems, or components, against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components, as defined in paragraph (b), are capable of fulfilling their intended functions." [10 CFR 50.65 (a)(1)] Monitoring is performed at the system level to monitor risk significant and standby SSCs and those SSCs that may not be effectively monitored using plant level

criteria. Component level criteria are used to monitor performance of a specific component. Monitoring and trending are performed frequently enough to detect and correct degrading equipment performance.

Performance and condition monitoring activities and associated goals and preventive maintenance activities shall be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months. The evaluations shall take into account, where practical, industry-wide operating experience. Adjustments shall be made where necessary to ensure that the objective of preventing failures of structures, systems, and components through maintenance is appropriately balanced against the objective of minimizing unavailability of structures, systems, and components due to monitoring or preventive maintenance. [10 CFR 50.65 (a)(3)]

Monitoring both reliability and availability ensures the objective of preventing failures is appropriately balanced against the objective of minimizing unavailability. For example, the risks of making equipment available for testing must be balanced against the potential improvement in reliability resulting from that testing.

Assurance of Maintenance Rule Program Continuation

Federal regulations in 10 CFR 50.65 require programs for monitoring the effectiveness of maintenance at nuclear power plants. This regulation remains in effect during the period of extended operation assuring that the maintenance rule program will continue.

Plant specific OE supports industry OE; therefore, there is no reason to go beyond the maintenance rule program for connections. Any loose bolted connection found in the plant will be documented in a condition report and an engineering evaluation will be conducted to determine the cause, event driven or age-related, so that appropriate corrective actions can be taken, if needed, to maintain function of the component throughout the period of extended operation.

Much of the OE cited in NUREG-1833 for the XI.E6 program, and in SAND96-0344 was pre-1996, which was when the maintenance rule was implemented. Since the maintenance rule was implemented, there are fewer instances of connections issues based on the lack of OE stating problems. This is verification that the maintenance rule is working to increase reliability of systems and components, and in this case specifically connections.