NRC FORM 658
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DATE OF MEETING
06/13/2000

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Docket Number(s)	PROJECT NUMBER 669
Plant/Facility Name	EPRI
TAC Number(s) (if available)	
Reference Meeting Notice	MAY 19, 2000
Purpose of Meeting (copy from meeting notice)	DISCUSSION OF NRC POSITION ON DEFENSE-IN-DEPTH & DIVERSITY RE DIGITAL RETROFITS

NAME OF PERSON WHO ISSUED MEETING NOTICE	TITLE
L.N. OLSHAN	PROJECT MANAGER

OFFICE
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DLPM

BRANCH
PD II-1

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DF03

Diversity and Defense-in-Depth Approaches

Joseph Naser

Utility Meeting with NRC
June 13, 2000
Rockville, Maryland

Background

- Utilities are expecting to implement digital systems to address obsolescence and productivity improvements
- Some utilities are planning massive modernization programs
- One driver for massive modernization is license renewal
- Productivity improvements and standardization are other drivers

EPRI

Background (Cont'd)

- NRC position that common mode failures are credible in digital systems
- New analyses for demonstrating adequate diversity and defense-in-depth
- Hardwired backup systems undesirable
- Modernization programs carried out incrementally over several outage cycles
- Looking for effective approach for utilities to identify adequate diversity and defense-in-depth

EPRI

Background (Cont'd)

- Utilities interested in better understanding what the NRC expects from them in the area of diversity and defense-in-depth implementation and analyses
- Is there a collaborative program on diversity and defense-in-depth that would support the reduction of cost and risk in implementing digital systems
- A number of possible approaches

Approaches

- Do nothing. The NRC's NUREG-0493, NUREG/CR-6303, and NUREG-0800 BTP-19 give adequate guidance.
- The NRC's NUREG-0493, NUREG/CR-6303, and NUREG-0800 BTP-19 do not give specific guidance that will assure acceptable results. Therefore, try to interpret and clarify the contents of these as applied to digital I&C systems.

Approaches (Cont'd)

- Based on the NUREGs and experience gained over time, put together guidelines or minimal requirements, which we would request NRC to review and give input, that utilities can use for their bid specifications and also as a checklist to evaluate the proposals when they come from the company submitting the proposal. This would include both adequate diversity and defense-in-depth and adequate analysis to prove it.

Approaches (Cont'd)

- Develop specific guidance for plants and perhaps even a template for submittals. This takes three flavors.

Approaches (Cont'd)

- Develop guidance for a specific supplier's equipment (i.e., the supplier of the new digital equipment). This would have to assume the maximum case, that is where all of the critical systems are being replaced, as it would be prohibitive to try to do this for all possible sequences of equipment replacement. The argument for this is that each supplier has a unique way to meet the requirements and the new equipment is the most important part of this argument.

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Approaches (Cont'd)

- Develop guidance based on plant type. The argument for this is that the equipment in the plant and analysis assumptions are the most important part of this argument. In this case, it may not be adequate to just look at a typical B&W PWR, CE PWR, GE BWR, and W PWR. It may be necessary to look at similar vintages of plants within those built by a specific vendor.

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Approaches (Cont'd)

- Develop guidance based on supplier's equipment and plant type. The argument for this is that the new systems, the equipment in the plant, and analysis assumptions are all important.

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Question

- Do any of these approaches really buy the utility any cost or risk reduction when it submits its diversity and defense-in-depth solution?
- Is the assumption that doing the analysis for the case of the maximum number of digital systems implemented subsume all of the intermediate steps getting to that maximum?