From: David Diec / NRR
To: Phil Qualls; Ray Gallucci; Sunil Weerakkody
Date: 9/23/03 10:28AM
Subject: Fwd: NEI FP forum -- Rulemaking

Sunil--- attached is a comment received from Woody Walker of Entergy.

Please let me know how you want to handle this. My suggestion is to reply with acknowledgment that as we continue to define the effectiveness of MAs, such comment received would be beneficial.

David Diec
U.S. NRC
Project Manager, DRIP/RPRP
Office Phone: 301-415-2834
Fax: 301- 415-2002
Email: dtd@nrc.gov

CC: James Bongarra; Richard Eckenrode

N-10

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by nrcgwia.nrc.gov; Tue, 23 Sep 2003 09:55:51 -0400
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To: "'dtd@nrc.gov'" <dtd@nrc.gov>
Subject: NEI FP forum -- Rulemaking
Date: Tue, 23 Sep 2003 08:55:15 -0500
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Mr. Diec :

I was in attendance at the NEI FP forum when you made your presentation on rulemaking to address the issue of manual actions. During the question and answer period, it seemed to me that there was a disconnect between NRR and plant practices. Mr. Garrett from Palo Verde was describing a "symptom based" approach, while it appeared the NRC desired a "prescriptive" procedure to address manual actions. I thought that a practical example might increase the understanding of the methods utilized by the industry. Forgive me if some of the following is too elementary but I want to make sure that we are on the same page.

I'm sure that you are aware that, in a PWR, an uncontrolled steam generator blowdown leads to an overcooling condition which can cause voids in the RCS and inhibit removal of heat from the core. When determining the systems/components necessary to achieve safe shutdown, analysts have typically chosen the simplest method for ensuring safe shutdown conditions can be achieved/maintained. The secondary system has numerous components that can control steam flow out of the generator (e.g. turbine bypass valves, downstream atmospheric dump valves) and prevent overcooling. However, the simplest method for controlling steam flow is to credit the Main Steam Isolation valves (MSIVs). Closing these valves ensures that an uncontrolled blowdown does not occur due to failure of the downstream secondary components.

Let's assume that a solenoid valve has to energize (or remain energized) in order for the MSIV to close. If the cables for the solenoid valve are damaged due to a fire, credit is taken for an operator bleeding air from the MSIV and allowing the mechanical spring to close the valve. Obviously, the operator would perform the "manual action" locally (i.e. at the valve location).

From an analyst viewpoint, the safe shutdown strategy is to close the MSIVs; either remotely (when the cables are not subject to fire damage) or locally (if cables are subject to fire damage). This strategy would be utilized for all plant fire areas with one exception; a fire in the room where the MSIVs are located could damage the "required" cables and prevent access to the valve(s) required for local operation. In this case, the analyst would credit taking manual control of the downstream components. Why manual control? Because tracing all the cables for the downstream components is labor intensive and it's much simpler to credit manual control of these components. Typically, these secondary system components are physically separated from the MSIVs by a substantial distance and in some cases by rated fire barriers. Consequently, the capability to locally control the secondary system components is assured (Note : the capability is not automatically assumed but is verified by the analyst).

The reasoning behind utilizing this type of strategy becomes clearer when you consider a realistic viewpoint. So, let's assume a fire occurs in the room where cables for the MSIVs are located. Let's also assume that it is a room where few components or cables are located. Most likely, a fire in this location would not impact enough components to cause a plant trip. Therefore, operations personnel would respond to the fire event by dispatching the fire brigade but continue to operate the plant. Even though the analysis credits a manual action to ensure safe shutdown, it would not be prudent to have a prescriptive fire response procedure that directs Operations personnel to manually close the MSIVs (in fact, this would cause a plant transient and unnecessarily challenge system components). Thus, although a manual action is "credited", in a real fire scenario, the manual action does not occur.

Now, let's assume enough components are affected that a plant trip does occur (either automatically or by operator action). Normally, on a plant trip, the MSIVs do not close. Instead, the turbine is tripped and steam flow is controlled by the various secondary system components. In other words, unless the secondary system components malfunction (e.g. a downstream ADV opens) and start dumping steam, then the plant will cooldown at a normal rate without having to close the MSIVs. Since the locations of the cables for the secondary components haven't been verified, the analyst "assumes" the components fail open and relies upon MSIV closure. However, as noted above, due to plant layout, the secondary components (and related cables) are physically remote from the MSIVs (and related cables). Therefore, for a real fire scenario, if the cables for the MSIVs are damaged, the secondary system components are most likely unaffected and cooldown can be accomplished without MSIV
closure. Again, it would not be practical to have a prescriptive procedure requiring MSIV closure when the fire will not lead to overcooling conditions. Instead, the operators would progress through the "Reactor Trip" procedure and control steam flow from the generators accordingly. If plant parameters indicated that overcooling conditions were occurring, then the operators would seek to control the malfunctioning secondary system component, potentially by local manual operation. Only if necessary would steam flow would be curtailed by manually closing the MSIVs. Thus, while the analysis credits the manual operation of the MSIV, a realistic fire will not require it's implementation. Instead, the operators would utilize the "Reactor Trip" procedure and respond to the "symptoms" caused by any failures. (Note : This approach would be applicable to other "events" (i.e. non-fire) as well as to other safe shutdown system responses).

What I'm trying to convey is that even though a manual action may "credited" by the analyst, it is not prudent for post-fire plant procedures to "prescriptively" specify the performance of the action. Guidance in the pre-fire plans (or other fire response procedures) will indicate potential failures and alert the Operations staff of manual actions that may need to be performed. Operators should be given the flexibility to address fire conditions by responding to the symptoms caused by

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I realize that I have bypassed the normal lines of communication between a plant and the NRC. However, I felt compelled to share this information with you. I would rather clear up a misunderstanding early in the process, than have NEI and the NRC trade correspondence for months. Feel free to contact me if you need additional clarification.

Thanks,

Woody Walker

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