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August 24, 2000

U. S. Nuclear Regulatory Commission
Washington D.C. 20555
ATTENTION: Document Control Desk

Subject: Duke Energy Corporation
Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 414
Topical Report DPC-NE-3002-A, Revision 4

Reference: Letter, Duke Energy Corporation to U.S. Nuclear Regulatory Commission, ATTENTION: Document Control Desk, Dated April 19, 2000, SUBJECT: Topical Report DPC-NE-3002-A, Revision 4

In the letter referenced above, Duke Energy Corporation submitted proposed Revision 4 to Topical Report DPC-NE-3002-A, *UFSAR Chapter 15 Transient Analysis Methodology*. Revision 4 specifies a three minute operator response time for depressurizing the primary system and for initiating safety injection termination following a steam generator tube rupture related to offsite dose. The proposed change in operator response time is consistent with that approved by an NRC Safety Evaluation dated April 29, 1997 for a steam generator tube rupture related to overfill. Following the April 19, 2000 submittal, the NRC asked several questions on the proposed change to the operator response times. These questions were discussed in a Duke/NRC telephone conference call held on August 22, 2000. The NRC questions, along with Duke's answers, are contained in the attachment to this letter.

Approval of this topical report revision is requested concurrent with, or prior to, the approval of a forthcoming related Catawba license amendment request that will revise the steam generator tube rupture licensing basis.

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Please address any questions to J. S. Warren (704) 382-4986 or G. B. Swindlehurst (704) 382-5176.

Very truly yours,

M. S. Tuckman

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Attachment

xc w/Attachment:

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w/Attachment
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ELL

Attachment 1

Duke Energy Corporation
Topical Report DPC-NE-3002-A, Revision 4
Response to NRC Questions Regarding Manual Actions Related to Steam Generator Tube Failure

Statement of NRC Questions:

In order to take credit for initiating depressurization of the primary system within 3 minutes after the primary system is 20% subcooled, and initiating SI termination 3 minutes after completing depressurization based on the April 29, 1997 Safety Evaluation, it is necessary to show that all conditions, information required, indications available and sequence of actions, etc., are identical or equivalent. Please describe the following items, or indicate that they are identical to the April 29, 1997 SE conditions, and describe any differences in them between the current event and that related to the April 29, 1997 SE:

- Control room conditions (e.g, alarms, peripheral activities being conducted)
- Information required by the operator to initiate each action
- Information required to know that the action has been successfully completed.
- Qualified displays providing the above information
- Sequence of actions leading up to, and to accomplish the intended result
- Procedures used to accomplish the actions
- Consequence of not accomplishing each action within the 3-minute time frame
- Risk significance of not accomplishing the actions
- Ability to recover from plausible errors in performance of manual actions, and the expected time required to make such a recovery

Attachment 1

Duke Responses:

- Control room conditions (e.g. alarms, peripheral activities being conducted):

  There are no changes to the available alarms and indications associated with either evolution. The conduct of control room activities is essentially the same. It is CNS practice to clear the control room of any unrelated activity at the onset of any significant event.

- Information required by the operator to initiate each action:

  The sequence leading into these evolutions has not changed. The operators are responding to the same indications and information.

- Information required to know that the action has been successfully completed:

  The actions are accomplished with control board devices, each of which has direct position indication associated with the device. In addition, the associated parameter, such as pressurizer pressure, pump current indication, and flow indications, are all available on the control boards, and have not changed since the original submittal.

- Qualified displays providing the above information:

  There are no changes to the displays used in either sequence. All are QA1 qualified instruments.

- Sequence of actions leading up to, and to accomplish the intended result:

  There is no change in the sequence leading up to the first sequence (initiating depressurization). There is no technical change to the method of actually initiating the depressurization (see discussion below for the procedural enhancements). There is no change to the second sequence (terminating safety injection).

Attachment 1

- Procedures used to accomplish the actions:

  The procedural guidance to initiate the depressurization has been enhanced to decrease the time needed to initiate the depressurization. All "notes" and "cautions" were removed from the sequence, since they were generic, operator knowledge items, and added no value to the sequence. The original procedure format required the operators to familiarize themselves with the depressurization termination criteria prior to initiating the depressurization (opening the PORV). The new sequence simply makes a quick verification of the parameters, and opens the PORV. A procedural "loop" is provided to continuously monitor the parameters as the primary pressure drops, and termination occurs when the correct values are achieved. Training on the changes were conducted in a recent operator requal segment, and the changes have been issued.

- Consequences of not accomplishing each action within the 3-minute time frame:

  Analysis indicates that the expected dose increase is approximately 1 rem (from 15 rem to 16 rem) for an increase from 3 to 5 minutes. This increase is considered insignificant and remains well below 10% of the 10CFR100 limit.

- Risk significance of not accomplishing the actions:

  The operator actions to depressurize the primary system and terminate safety injection are not independent. A delay in accomplishing the depressurization reduces the time available for terminating safety injection if steam generator overfill is to be prevented. The risk associated with steam generator overfill is judged to be small and the risk increase as a result of small delays in accomplishing these actions is judged to be insignificant.

Attachment 1

- Ability to recover from plausible errors in performance of manual actions, and the expected time required to make such a recovery:

  As noted above, each action is accomplished with control board devices that have both direct indication of the component status, and control board indication of the affected parameters. During these evolutions, these parameters are the direct focus of the control room team. Recognition of any error would be almost immediate. The devices employed to accomplish the results are simple switches and pushbuttons, meaning that recovery would neither be difficult nor time consuming.