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DUKE POWER

March 4, 1996

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

Subject: McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369, 370
Request For Amendment: Reactor Coolant Leakage Detection Systems

Gentlemen:

On September 5, 1995, Catawba Nuclear Station submitted a proposed UFSAR change to delete the seismic qualification requirement for the Containment Atmosphere Particulate Radiation Monitors (CAPRMs). The NRC staff concluded that Catawba had demonstrated an acceptable alternative to Position C.6 of Regulatory Guide 1.45 by showing that adequate instrumentation and plant response procedures are available to assess conditions inside containment following a seismic event comparable to an SSE. The NRC approved this proposal on December 29, 1995. Pursuant to 10 CFR 50.90, and in order to maintain consistency between the Duke Power plant response procedures, the subject license amendment is requested for Facility Operating Licenses NPF-9 and NPF-17 for McGuire Nuclear Station, Units 1 and 2.

McGuire's CAPRMs are not seismically qualified. A section of McGuire's FSAR erroneously stated that the CAPRMs were seismically qualified. This was changed last year via the 10CFR50.59 process. McGuire's Earthquake Response Procedure was part of the basis for this change. It presently states that we will trip the reactors if the effects of an earthquake are seen, heard, or felt. To maintain consistency between the Duke Power plant response procedures, a change to the response procedure was initiated consistent with the approved Catawba Nuclear Station change. During the 10CFR50.59 change process, an unreviewed safety question was identified.

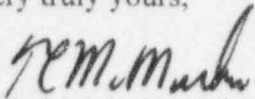
These proposed changes (see enclosure) to the Facility Operating Licenses and Duke's determination of no significant hazards have been reviewed by McGuire's Plant Operational Review Committee (PORC) and Duke's Nuclear Safety Review Board (NSRB), and have concluded that implementation of these changes will not result in an undue risk to the health and safety of the public.

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Should you have any questions regarding this issue, please contact A.D. Jones-Young at (704) 382-3154 or Kay L. Crane at (704) 875-4306.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'T.C. McMeekin', written in a cursive style.

T. C. McMeekin, Vice President
McGuire Nuclear Station

U. S. Nuclear Regulatory Commission

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xc: Mr. S.D. Ebnetter, Regional Administrator
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Atlanta, GA 30323

Mr. Victor Nerses, Project Manager
U. S. Nuclear Regulatory Commission
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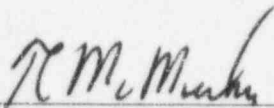
G.F. Maxwell
Senior Resident Inspector (MNS)

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March 4, 1996

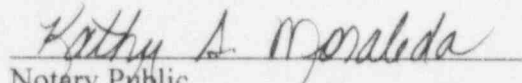
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T. C. McMeekin, being duly sworn, states that he is Site Vice-President of McGuire Nuclear Station, Duke Power Company; that he is authorized on the part of said company to sign and file with the U.S. Nuclear Regulatory Commission these revisions to the McGuire Nuclear Station License Nos. NPF-9 and NPF-17; and, that all statements and matters set forth therein are true and correct to the best of his knowledge.



T.C. McMeekin, Site Vice-President

Subscribed and sworn to me this 4th day of March 1996.


Notary Public

My Commission Expires:

12/13/98

Nuclear Regulatory Commission

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bxc: P.R. Newton

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ELL

DESCRIPTION OF CHANGE

The McGuire Final Safety Analysis Report (FSAR), Section 5.2.7, "Reactor Coolant Pressure Boundary Leakage Detection Systems" includes a review of the various Reactor Coolant leakage detection systems. One of the systems which provides indication of unidentified leakage from the Reactor Coolant pressure boundary into the containment is the Containment Atmosphere Particulate Radiation Monitors (CAPRMs), 1EMF38(L) and 2EMF38(L). Previously, the subject FSAR section stated that EMF38(L) is seismically qualified to function through the safe shutdown earthquake. However, during an Engineering review of the seismic classification of the EMF38(L) monitors, it was determined that these monitors are not seismic Category I and the McGuire FSAR was revised to reflect that the airborne particulate radioactivity monitoring equipment is not seismically qualified to function through a safe shutdown earthquake. The plant response procedure for earthquakes is in place to specify that the reactor is tripped if the effects of an earthquake are seen, heard, or felt. Subsequently, systems are thoroughly investigated for damage. Therefore, there is no safety significance in not having the CAPRMs seismically qualified.

On September 5, 1995, Catawba Nuclear Station submitted a proposed UFSAR change to delete the seismic qualification requirement for the CAPRMs. The NRC staff concluded that Catawba had demonstrated an acceptable alternative to Position C.6 of RG 1.45 by showing that adequate instrumentation and plant response procedures are available to assess conditions inside containment following a seismic event comparable to an SSE. The NRC approved this proposal on December 29, 1995. In order to maintain consistency between the Duke Power plant response procedures, McGuire would like to revise the plant response procedure for earthquakes to remove the requirement to immediately trip the reactors if the effects of an earthquake are seen, heard, or felt and rely on seismic instrumentation and data obtained from a post-event plant walkdown to determine if a plant shutdown is required. A proposed change to the earthquake procedure indicates that the probability of a malfunction of equipment important to safety previously evaluated in the safety analysis report would be increased, with respect to the requirements of RG 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems". Such a change to the plant response procedure for earthquakes constitutes an unreviewed safety question (USQ), as defined in 10 CFR 50.59. Therefore, per 10 CFR 50.59(2)(c), we request that the NRC review and approve this change through an amendment to the McGuire operating licenses similar to Catawba Nuclear Station as described above.

BACKGROUND

At McGuire, during an engineering review of the monitors, the question of seismic qualification was raised. Documents were found which showed that these monitors are not required nor were they ever intended to be seismically qualified as specified in RG 1.45, position C6. During the McGuire licensing process, Duke (William O. Parker, Jr.) sent a letter to Harold R. Denton, USNRC, attention B.J. Youngblood, dated March 25, 1981 that further stipulated that the radiation monitors were not safety related. However, this information was never reflected in the McGuire FSAR. Presently, McGuire procedures specify that the reactor is tripped if the effects

of an earthquake are seen, heard, or felt. Subsequently, systems are thoroughly investigated for damage. Therefore, there is no safety significance in not having the Containment Particulate monitor seismically qualified.

The Reactor Coolant Leakage Detection Systems are provided to detect structural degradation of the Reactor Coolant pressure boundary on a timely basis. This ensures that corrective actions are taken before such degradation becomes sufficiently severe that it jeopardizes the safety of the Reactor Coolant system, or before the leakage could increase to a level beyond the capability of the makeup system to replenish the coolant loss. The CAPRM (EMF38(L)) is a component of the leakage detection systems.

The operability requirements for the Reactor Coolant Leakage Detection Systems are given in the McGuire Technical Specification (TS) Section 3.4.6.1. Specifically, TS 3.4.6.1 requires that the following combination of Reactor Coolant Leakage Detection Systems be operable:

- 1) The Containment Atmosphere Gaseous Radioactivity Monitoring System (EMF39(L)),
- 2) Either the Containment Floor and Equipment Sump Level Systems or Flow Monitoring System (An application for an amendment, dated March 4, 1996, is being proposed to delete the Flow Monitoring System), and
- 3) Either the Containment Atmosphere Particulate Radioactivity Monitoring System (EMF38(L)) or the Containment Ventilation Unit Condensate Drain Tank (VUCDT) Level Monitoring System.

These requirements are based on the regulatory positions of RG 1.45. Regulatory Position C6 specifies that the CAPRM EMF38(L)) should remain functional when subjected to the SSE.

The following provisions are or will be placed in the appropriate plant procedures with respect to Reactor Coolant System leakage and the ability to detect it.

- 1) During power operations without an earthquake having occurred, upon receipt of a containment airborne particulate radiation monitor (EMF38(L)) high radiation alarm (Trip 2 Alarm) or the Rate of Change Alarm in the control room, the operators are directed by the appropriate procedures to verify the alarm and take the appropriate actions to determine if the reactor coolant system leakage exceeds 1 gpm.
- 2) Following any earthquake, including one smaller than the OBE, the emergency response procedure for earthquakes will be revised to initially assume that the Containment Floor and Equipment Sump Level Systems or the Flow Monitoring System (an application for an amendment, dated February 26, 1996 is being proposed to delete the Flow Monitoring System) and the VUCDT Level Monitoring System are inoperable and to determine the status of 1(2)EMF38(L) and 1(2)EMF39(L). This is done by performing a source check from the Control Room and by visually verifying the proper operation of these monitors. Should it be determined that either EMF38(L) or EMF39(L) is not functional, the appropriate steps will be

taken; i.e., declare the monitor(s) inoperable and apply the action statement for TS 3.4.6.1 which may require that the associated unit(s) be taken to Cold Shutdown (Mode 5) if the minimum required Reactor Coolant Leakage Detection Systems are not operable. Cold Shutdown is the mode for which the Reactor Coolant Leakage Detection Systems are not required to be operable per TS.

- 3) In the event that an OBE occurs, the operators will be directed by the emergency response procedures to bring the unit(s) to Hot Standby (Mode 3) within the next 6 hours. Hot Standby is a mode in which the Reactor Coolant Leakage Detection Systems are required per TS.
- 4) In the event that a SSE occurs, the operators will be directed by the emergency response procedures to bring the unit(s) to Cold Shutdown within the following 30 hours. The containment particulate monitor is not required to be functional in Mode 5.

In the event that EMF38(L) or EMF39(L) is not operable following an earthquake of any magnitude, appropriate actions, such as the TS initiation of containment atmosphere grab samples at least once per 24 hours, will be implemented.

The proposed change to the plant response procedure for earthquakes may increase the probability of a malfunction of equipment important to safety previously evaluated in the safety analysis report. Specifically, the ability to detect Reactor Coolant System leakage may be affected by an earthquake relative to Regulatory Position C6 of RG 1.45. Therefore, we are requesting NRC approval to implement the revision to the plant response procedure.

SAFETY ANALYSIS

From a review of RG 1.45, it is apparent that two concerns are relevant to the NCR regulatory position concerning the ability to detect the presence of a leak in the Reactor Coolant System following an earthquake. First, it was noted that "if a seismic event comparable to a SSE occurred, it would be important for the operator to assess the condition in containment quickly. For this reason, the NRC states in RG 1.45, Position C6, that "the airborne particulate radioactivity monitoring system (EMF38(L)) should remain functional when subjected to the SSE". Second, it was acknowledged that "since nuclear power plants may be operating at the time the earthquake occurs and may continue to operate after the earthquake, it is prudent to require the leakage detection systems to function under the same conditions". For this reason, it is stated in Regulatory Position C6 that "the leakage detection systems should be capable of performing their functions following seismic events that do not require plant shutdowns".

There are several means of assessing the condition inside the containment at McGuire which would remain available following a postulated SSE. These include, but are not limited to, the following:

- narrow range containment pressure instrumentation,
- wide range containment pressure instrumentation,
- wide range containment sump level instrumentation,
- high range containment radiation monitors (EMF51A and EMF51B), and
- acquisition and analysis of grab samples of containment atmosphere.

In addition, an inspection of the plant would be conducted following an earthquake pursuant to the steps in the plant response procedures. The condition of the Reactor Coolant System (among other plant systems) would be assessed in the walkdown. For these reasons, it is determined that the operators can assess conditions in containment following the SSE.

Following any earthquake, including one smaller than the OBE, the plant response procedures for earthquakes will be revised to initially assume that the Containment Floor and Equipment Sump Level Systems or the Flow Monitoring System (an application for an amendment, dated March 4, 1996 is being proposed to delete the Flow Monitoring System) and the VUCDT Level Monitoring System are inoperable and to determine the status of 1(2)EMF38(L) and 1(2)EMF39(L).

Should it be determined that either EMF38(L) or EMF39(L) is not functional, the appropriate steps will be taken; i.e., declare the monitor(s) inoperable and apply the action statement for TS 3.4.6.1 which may require that the associated unit(s) be taken to Cold Shutdown (Mode 5) if the minimum required Reactor Coolant Leakage Detection Systems are not operable. Cold Shutdown is a mode for which the Reactor Coolant Leakage Detection Systems are not required to be operable per TS. This takes that unit out of the applicable modes of TS 3.4.6.1 and satisfies the intent of the Regulatory Position of RG 1.45. The functional status of these monitors may be ascertained from outside containment by performing a source check from the control room and by visual inspection at the monitor skid in the Auxiliary Building. Access from the control room to the monitor skid is located within Seismic Category I structures and in a "mild" environment. The check of the functional status can be done in a reasonable period of time without exposure of anyone to a harsh environment.

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

1. *involve a significant increase in the probability or consequences of an accident previously evaluated; or*

EMF38(L) is not used directly for any phase of power generation or conversion or transmission, normal decay heat removal, fuel handling, or the processing of radioactive fluids. As such, it is not an "accident initiator". No "accident initiator" is affected by the change. Thus, the

probability of accidents evaluated in the FSAR is not affected by the change. It is determined that sufficient ability to determine conditions inside containment remain available for any earthquake up to and including the SSE. Furthermore, should either EMF38(L) or EMF39(L) be found to not be functional following any earthquake, including those smaller than the OBE, the appropriate steps will be taken; i.e., declare the monitor(s) inoperable and apply the action statement for TS 3.4.6.1 which may require that the associated unit(s) be taken to Cold Shutdown (Mode 5) if the minimum required Reactor Coolant Leakage Detection Systems are not operable. Cold Shutdown is a mode for which neither the Emergency Core Cooling System nor the containment safeguards are required. Finally, no equipment provided to mitigate any accident is adversely affected by the change. For these reasons, the proposed change will not involve a significant increase in the probability or consequences of an accident previously evaluated in the SAR.

2. *create the possibility of a new or different type of accident from any accident previously evaluated; or*

As stated above, no equipment used in direct support of power generation or conversion or transmission, normal decay heat removal, fuel handling, or processing of radioactive fluids is affected with the update. No new failure modes are identified with the change. The upper bound to an undetected leak in the Reactor Coolant System is a Loss of Coolant Accident. As noted above, no equipment provided to mitigate a LOCA is affected by the change. For these reasons, the change will not create a new or different type of accident from any accident previously evaluated.

3. *involve a significant reduction in a margin of safety.*

It has been determined that sufficient means remain at the disposal to the operators to assess conditions within the containment following any earthquake up to and including the SSE. In particular, the ability to determine leakage with the sensitivity comparable to that of EMF38(L) can be established. This meets the intent of the Regulatory Position of RG 1.45. In addition, should it be determined that either EMF38(L) or EMF39(L) is not functional following any earthquake, the appropriate steps will be taken; i.e., declare the monitor(s) inoperable and apply the action statement for TS 3.4.6.1 which may require that the associated unit(s) be taken to Cold Shutdown (Mode 5) if the minimum required Reactor Coolant Leakage Detection Systems are not operable. This brings the unit(s) to a mode in which TS 3.4.6.1 does not apply. It ensures that at least the minimum required Reactor Coolant System leakage detection systems will be functional before power operations are continued following a postulated earthquake smaller than the OBE. It ensures protection of the reactor coolant pressure boundary, one of the fission product barriers. No other fission product barrier is affected by the change. Therefore, the margin of safety is not reduced.

Therefore, based on the information contained in this submittal, it is determined that no significant hazard is associated with the proposed change.

ENVIRONMENTAL ASSESSMENT

As determined above, both equipment and procedures are in place to ensure that the intent of Regulatory Position C6 of RG 1.45 are met.

EMF38(L) and EMF39(L) have interfaces with both the Containment Purge Ventilation (VP) System and the Containment Air Addition and Release (VQ) System. The VP system is designed primarily to remove radioactivity from the containment and incore instrumentation rooms by exhausting air from these volumes through filters and replacing it with outside air. Pursuant to the limitations of TS 3.6.1.9, the VP system for the upper compartment may be used in Modes 1- 4 for up to 250 hours during a calendar year. The VQ System is designed to maintain containment within the limits of TS 3.6.1.4 (between -.3 and +.3 psig).

If either EMF38(L) or EMF39(L) is not functional following an earthquake, it will be declared inoperable and the appropriate steps will be taken. Pursuant to TS 3.3.3.1 (Table 3.3-6, Action 26), Selected Licensee Commitment (SLC) 16.11-7 (Table 16.11-5, Action 4), if EMF39(L) was found to be inoperable, the purging operations with the VP System would be stopped and the containment isolation valves closed and, if necessary, the cessation of operation of the VQ System and closures of its valves. These steps would ensure that no releases in excess of 10 CFR100 would occur.