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April 23, 2001

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

Subject: Duke Energy Corporation
McGuire Nuclear Station, Unit 1
Docket Number 50-369
Notice of Enforcement Discretion (NOED) Request
Technical Specifications (TS) 3.8.7 (Inverters -
Operating)

Attached is documentation of the background and justification supporting a Notice of Enforcement Discretion (NOED) request for McGuire Unit 1. The information in the Attachment 1 was discussed with the NRC staff in a telephone conference call on April 21, 2001.

As described in detail in Attachment 1, McGuire requested discretion from enforcing TS Limiting Condition for Operation (LCO) 3.8.7 as it pertains to Required Action A.1. This Required Action applies to the case of one vital inverter inoperable. At the time of the conference call with the NRC on April 21, 2001, McGuire was engaged in repair efforts on 1EVIB inverter and the Completion Time for the above Required Action would have expired on April 22, 2001 at approximately 0600 hours. It did not appear that repair and subsequent testing activities would be complete by that time. Repairs are complete and the inverter was declared Operable at 0518 on April 22, 2001. McGuire Nuclear station did not exercise the granted enforcement discretion since the inverter was Operable prior to 0600 on April 22, 2001.

Site personnel will continue with causal analysis for the loss of the inverter. No problems were identified in the internals of the

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EVIB inverter. At this time, failure of the incoming feeder breaker appears to be the most likely cause of the event. This breaker is external to the inverter and was replaced with a new breaker. No specific failure modes are identifiable at this time.

The request for enforcement discretion was approved by the McGuire Plant Operations Review Committee (PORC) on April 21, 2001, prior to the above referenced conference call with the Nuclear Regulatory Commission Staff. The NRC granted enforcement discretion for an additional 36 hours which extended the Allowed Outage Time to 1800 on April 23, 2001.

There were no regulatory commitments associated with the request. In addition, since this was a one time request for less than 14 days there is no technical specification amendment in follow-up to the request. The request was prepared in accordance with the NRC Staff guidance included in the NRC Inspection Manual Part 9900 Technical Guidance Operations - Notices of Enforcement Discretion (Issue Date 12/12/00).

Should you have any questions concerning this request, please call Norman T. Simms (704) 875-4685.



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ELL-EC050
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Attachment 1
McGuire Nuclear Station, Unit 1
Request for Enforcement Discretion
TS 3.8.7 (Inverters - Operating)

Duke Energy hereby requests that the NRC grant discretion in enforcing TS LCO 3.8.7 relative to compliance with the 24-hour Completion Time of Required Action A.1 and allow the Unit to remain in Mode 1 (Power Operation) for sufficient time to identify the failure and affect repairs. Unit 1 EVIB Inverter was declared inoperable on April 21 at approximately 0600 upon discovery of an apparent failure. McGuire is presently engaged in troubleshooting to effect repairs with the inverter and the associated incoming feeder breaker. Necessary repair and subsequent testing activities are not likely to be complete by 0600 on April 22, 2001. Duke Energy is requesting that the Completion Times of the above Required Actions be extended from the current 24 hours by an additional 120 hours, for a total of 144 hours, to allow completion of the work. The justification for this request is described below. Each criteria of the Enforcement Discretion Policy is addressed separately in the order the criteria appear in the NRC guidance.

1. Technical Specification or License Condition violated

McGuire is requesting enforcement discretion from TS LCO 3.8.7. This LCO governs Inverters - Operating for Modes 1, 2, 3, and 4. LCO 3.8.7 requires that four inverters be operable. Condition A

for this LCO states that with one inverter inoperable, the inverter must be restored to operable status within 24 hours. Condition B states that with the Required Action and associated Completion Time of Condition A not met, the unit must be in Mode 3 within 6 hours and in Mode 5 within 36 hours.

2. Circumstances surrounding the situation

Breaker EVDB-3E feeding inverter 1EVIB opened for undetermined reasons. The abnormal operating procedure for loss of a vital inverter AP-15, Loss of Vital or Aux Control Power, was entered and appropriate actions were completed. In addition, anticipated entries were made into the loss of letdown and nuclear instrumentation Abnormal Procedures for failures resulting from the loss of the vital inverter. All of the actions of the Abnormal Procedures were appropriately completed by control room operators. In addition, the bus which was powered by 1EVIB is currently powered by a regulated power source.

As of this time, troubleshooting has included visual examinations, continuity checks of internal fusing and tightness of connections associated with the incoming feeder breaker. Additional, detailed troubleshooting of the vital inverter will be necessary to isolate which components within the inverter may have malfunctioned or to address any problem with the incoming breaker. The nature of this detailed testing is such that it is

difficult to predict the length of time needed to complete testing and repairs.

There were no identifiable precursor conditions that would indicate why the inverter or incoming breaker would have malfunctioned at this time. The inverters in all four channels of Unit 1 were replaced in the most recent refueling outage. Inverters of the same design were installed in McGuire Unit 2 in the Fall of 2000 and have operated without malfunction since installation.

3. The safety basis for the request, including the evaluation of the safety significance and potential consequences of the proposed action.

At McGuire, the inverters are part of the distribution system and considered the preferred source of power for the AC vital buses because of the stability and reliability they achieve. The function of the inverter is to provide AC electrical power to the vital buses. The inverters can be powered from a station battery charger or from the station battery. The station battery provides an uninterruptible power source for the instrumentation and controls for the Reactor Protection System (RPS) and the Engineered Safety Feature Actuation System (ESFAS).

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR Chapter 6 and Chapter 15 assume Engineered Safety Feature systems are Operable. The inverters

are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability or necessary power to the RPS and ESFAS instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. AC vital buses must be operable during accident conditions in the event of:

- a. An assumed loss of all offsite AC electrical power or all onsite AC electrical power; and
- b. A worst case single failure.

Failure of a vital inverter is within the design basis of the plant. The loads supplied by the vital inverter are currently functional although powered by a regulated alternate power source.

The event of concern is the vital inverter 1EVIB out of service for longer than the Technical Specification AOT. The event was modeled and analyzed in the McGuire PRA by setting the event "Inverter 1EVIB Fails" equal to 1.0. This effectively fails power to the 120 volt AC vital bus 1EKVB and no credit was applied for the alternate non-safety power supply from 1KRP. Additionally, the failure probability for a second vital inverter was revised from the random failure probability to the common cause beta failure probability of $5E-2$. The resulting change in core damage frequency was found to be $1.7E-7$ per day.

A temporary change such as a NOED is "non-risk-significant" if the change in core damage probability is less than $1E-6$. Therefore the risk impact of continued operation with the vital inverter 1EVIB inoperable beyond the 24 hour Tech Spec limit

would be considered "non-risk-significant" for a time period up to 5 days. An extension for continued operation for up to 5 days with the vital inverter 1EVIB inoperable and no preventive maintenance on risk significant equipment in progress is therefore acceptable from a core damage risk perspective.

The McGuire core damage sequences associated with LERF are dominated by Interfacing Systems LOCA. This event involves core damage sequences which contribute insignificantly to large early release frequency. Therefore, the proposed extension would have no significant impact with respect to LERF for McGuire.

4. The basis for the licensee's conclusion that noncompliance will not be of potential detriment to the public health and safety and that no significant hazard consideration is involved.

NRC granting of this request for enforcement discretion will not have any adverse consequences from the standpoint of public health and safety. Relief from the applicable 24-hour Completion Time to support the remaining corrective maintenance and testing activities is preferable to the transient that would be incurred if Unit 1 were forced to shut down while the inverter work is in progress. Duke Energy has evaluated the consequences of this request from a probabilistic risk standpoint and the results were found to be acceptable. During the period covered by this request, all Train A safety related components will continue to remain fully operable and capable of fulfilling their required safety functions. Should any unplanned adverse situation occur

which renders another inverter inoperable, Unit 1 would then comply with the Required Action and Completion Time of LCO 3.0.3.

There are No Significant Hazards¹ considerations associated with this request for enforcement discretion. This is demonstrated as follows:

This request for enforcement discretion does not involve a significant increase in the probability or consequences of an accident previously evaluated. Granting of this request will have no effect on accident probabilities, since the inverters are not considered accident initiating equipment and no physical changes are being made to the plant which would impact accident probabilities. Granting of this request would not result in any adverse impact from the standpoint of availability or reliability of 1EVIA, 1EVIC, or 1EVID inverters. Also, this request was evaluated and found to be acceptable from a risk standpoint. Therefore, there will be no significant increase in any accident consequences.

This request for enforcement discretion does not create the possibility of a new or different kind of accident from any accident previously evaluated. No new accident causal mechanisms are created as a result of the NRC granting of this request for enforcement discretion. No changes are being made to the plant which will introduce any new accident causal mechanisms.

¹ As defined by the criteria of 10 CFR 50.92 Issuance of Amendment

This request for enforcement discretion does not involve a significant reduction in a margin of safety. Margin of safety is related to the confidence in the ability of the fission product barriers to perform their design functions during and following an accident situation. These barriers include the fuel cladding, the reactor coolant system, and the containment system. The performance of these fission product barriers will not be degraded by the NRC's granting of this request. No safety margins will be impacted. The risk implications of this request were evaluated and found to be acceptable.

5. The basis for the licensee's conclusion that the noncompliance will not involve adverse consequences to the environment.

This request for enforcement discretion will not result in any significant changes in the types, or significant increase in the amounts, of any effluents that may be released offsite. In addition, no significant increase in individual or cumulative occupational radiation exposures will be involved as a result of the request. Therefore, it can be concluded that the NRC's granting of this request for enforcement discretion will not involve any adverse consequences to the environment.

6. Proposed compensatory measures

These compensatory measures were not quantified nor credited in the risk analysis performed for this proposed Enforcement

Discretion request. The following compensatory measures will be implemented during the period of noncompliance.

- Control Room personnel will be briefed on the impact of the failure of the inverter on each shift. Each shift will appropriately review the loss of inverter as it may affect normal and emergency procedures.

- Switchyard maintenance that could cause a loss of offsite power event will be suspended until the inverter is returned to service.

- The regulated alternate AC power source will not be intentionally removed from service except for short periods of time to support troubleshooting and for final restoration to service of inverter EVIB.

7. Justification for the duration of the non-compliance

The duration of the non-compliance is limited to the time required to complete remaining maintenance activities and conduct required subsequent testing of inverter 1EVIB plus margin to accommodate unforeseen circumstances. McGuire is therefore requesting that the current 24-hour Completion Time be extended by an additional 120 hours to 144 hours. This will provide for adequate time to complete the activities. As stated in items 3 and 4, there is no safety significance or potential detriment to the health and safety of the public.

8. Statement that the request has been approved by the facility organization that normally reviews safety issues.

This request was reviewed and approved by the McGuire Plant Operations Review Committee in a special meeting on April 21, 2001.

9. How one of the NOED criteria for appropriate plant conditions specified in Section B is satisfied.

This request is intended to avoid an undesirable unit shutdown transient as a result of requiring compliance with the TS and, thus, minimize potential safety consequences and operational risks.

10. If a follow-up license amendment is required, the NOED request must include marked-up TS pages showing the proposed TS changes.

No follow-up license amendment is required in conjunction with this NOED request.