

February 4, 2004

Mr. D. M. Jamil
Vice President
McGuire Nuclear Station
Duke Energy Corporation
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION, UNITS 1 AND 2 RE: PROPOSED
EMERGENCY PLAN CHANGES (TAC NOS. MB8943 AND MB8944)

Dear Mr. Jamil:

By letter dated May 5, 2003, as supplemented by letter dated August 25, 2003, Duke Energy Corporation submitted proposed changes to the McGuire Nuclear Station (McGuire), Units 1 and 2, Emergency Plan for Nuclear Regulatory Commission (NRC) review and approval prior to implementation in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.54(q).

The proposed changes can be summarized as redefining a small sector of the Emergency Planning Zone.

Based on its review, the NRC staff has concluded that the proposed McGuire Emergency Plan changes do not decrease the effectiveness of the Emergency Plan and that the plan, as changed, continues to meet the planning standards of 10 CFR 50.47(b) and (c) and the requirements of Appendix E to 10 CFR Part 50. As agreed to by your staff, the McGuire Emergency Plan changes shall be implemented within 30 days from the issuance date of this letter. The details of the NRC staff's review are contained in the enclosed Safety Evaluation.

Sincerely,

/RA/

Leonard N. Olshan, Senior Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosure: As stated

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO PROPOSED EMERGENCY PLAN CHANGE

DUKE ENERGY CORPORATION

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-369 AND 50-370

1.0 INTRODUCTION

By letter dated May 5, 2003, as supplemented by letter dated August 25, 2003, Duke Energy Corporation (the licensee) submitted a proposed change to the McGuire Nuclear Station (McGuire) Emergency Plan. The proposed change consists of redefining a small sector of the Emergency Planning Zone (EPZ).

2.0 REGULATORY EVALUATION

2.1 Regulations

Title 10 of the *Code of Federal Regulation* (10 CFR) Section 50.47)c)(2), states in part: "...The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by demography, topography, land characteristics, access routes, and jurisdictional boundaries...."

Title 44 of the Code of Federal Regulations, Section 350.4(e), states in part: "FEMA has entered into a Memorandum of Understanding with the NRC to which it will furnish assessments, findings, and determinations as to whether State and local emergency response plans and preparedness are adequate and continue to be capable of implementation."

2.2 Guidance Documents

Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," Revision 4, states, in part: "The criteria and recommendations contained in Revision 1 of NUREG-0654/FEMA-REP-1 are considered by the NRC staff to be acceptable methods for complying with the standards in 10 CFR 50.47 that must be met in onsite and offsite emergency response plans."

NUREG-0654/FEMA-REP-1, Rev 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," and NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in support of Light Water Nuclear Power Plants,"

include the following criteria for EPZ: "...The choice of the size of the EPZ represents a judgement on the extent of detailed planning which must be preformed to assure an adequate response base....The task force selected a radius of about 10 miles for the plume exposure pathway and a radius of 50 miles for the ingestion exposure pathway...Although the radius implies a circular area, the actual shape would depend upon the characteristics of the particular site....Detailed planning within the 10 miles would provide a substantial base for expansion of response efforts in the event that this proved necessary."

3.0 TECHNICAL EVALUATION

The Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's regulatory and technical analyses that has been provided in the licensee's submittal dated May 5, 2003, as supplemented by letter dated August 25, 2003. The evaluation below will support the conclusion that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the approval of the proposed emergency plan change will not be inimical to the common defense and security or to the health and safety of the public.

3.1 Emergency Plan Change-Revision to Sector S of the McGuire Nuclear Station Emergency Planning Zone (EPZ), Licensee Justification

3.1.1 Background Information

The overall objective of the McGuire Emergency Plan is to provide for early detection, warning and protective action response and recommendations for emergency conditions at McGuire that may affect the site proper and/or off-site areas. The basis for this plan is the "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," NUREG-0654/FEMA-REP-1, Revision 1, and 10 CFR Part 50. EPZs are areas over which emergency planning efforts are carried out about each nuclear facility. EPZs are defined as the areas for which planning is needed to assure that prompt and effective actions can be taken to protect the public in the unlikely event of an accident. These zones are defined for both the short term "plume exposure pathway" and for the longer term "ingestion exposure pathways." The State response organizations are principally responsible for the planning associated with the ingestion exposure pathway.

The principle exposure sources of the plume exposure pathway are: (a) whole body external exposure to gamma radiation from the plume and from deposited material, and (b) inhalation exposure from the passing radioactive plume. For the plume exposure pathway, shelter and/or evacuation would likely be the principal immediate protective actions to be recommended for the general public. The size (about a 10-mile radius) for the McGuire Nuclear Station (McGuire Emergency Plan Figure i-l) was primarily based on the following considerations:

- a) Projected doses from the traditional design basis accidents would not exceed Protective Action Guide levels outside the zone;
- b) Projected doses from most core melt sequences would not exceed Protective Action Guide levels outside the zone;

- c) For the worst core melt sequences, immediate life threatening doses would not generally occur outside the zone; and
- d) Detailed planning within 10 miles would provide a substantial base for expansion of response efforts in the event that this proved necessary.

3.1.2 Description and Basis of Change

Gaston County Emergency Management has requested that Duke Energy redefine Sector S of the EPZ. The original McGuire Nuclear Station Plume Exposure Pathway EPZ boundaries were established in 1980 using roadways, county lines, city limits and the existing population. The designated exposure pathways provided the most reasonable boundaries based on these criteria. Sector S's outermost boundary was defined as the city limits of Mount Holly. Significant changes have occurred in the population and city limits of this sector over the last 23 years. With annexation, the city limits of Mount Holly extends several additional miles in all directions. By letter dated July 10, 2002, Gaston County Emergency Management requested that Duke Energy redefine the outermost section of EPZ as it pertains to the town of Mount Holly to coincide with the CSX railroad right of way (tracks) that dissects Mount Holly from the southeast to the northwest.

This boundary is easily identifiable by the citizens of Mount Holly and is slightly outside of the 10-mile plume exposure EPZ as defined by NUREG-0654. The current boundary is greater than 10 miles from the site and not defined by easily determined landmarks. Gaston County Emergency Management, the North Carolina Emergency Management Radiological Emergency Plan Program Manager, FEMA Region IV and resolutions passed by the Mount Holly City Council and Gaston County Board of Commissioners are in support of this change. By redefining the outermost boundary around Mount Holly as the CSX railroad tracks, the boundary will be easily identified by the citizens and Gaston County Emergency Management for implementation of its evacuation plan. The current residents that are located in the portion of Mount Holly that will be outside of the plume exposure pathway would still be within the ingestion exposure pathway. There are approximately 2000 residents that will be affected by this change.

NUREG-0396 provides guidance for the identification of the area over which planning for predetermined actions should be carried out. The two predominate exposure pathways are the short term "plume exposure pathway" and the long term "ingestion exposure pathway." Concerning the plume exposure pathway NUREG-0654 states: "The task force selected a radius of about 10 miles for the plume exposure pathway and a radius of about 50 miles for the ingestion exposure pathway. Although the radius for the EPZ implies a circular area, the actual shape would depend upon the characteristics of a particular site."

The NRC concluded (see NUREG-0654) that it would be unlikely that any protective actions for the plume exposure pathway would be required beyond the plume exposure EPZ. Also, the plume exposure EPZ is of sufficient size for actions within this zone to provide for substantial reduction in early severe health effects in the event of a worst case core melt accident.

In conclusion, the proposed revision to the McGuire Emergency Plan will continue to meet applicable regulatory requirements and guidance documents. Furthermore, this revision will

facilitate definitive identification of the outermost boundary of Section S by the citizens of Mount Holly and implementation of the Gaston County Emergency Management Evacuation Plan.

FEMA has also issued approval of the changes to the modification of the McGuire EPZ. In a letter dated April 14, 2003, to FEMA Region IV, FEMA Headquarters stated, "We have reviewed your memorandum, supporting letters, and documentation and concur that modifying the current plume EPZ, as indicated in the documentation, could provide a clearer delineation of the 10-mile boundary without detracting from emergency preparedness."

3.2 NRC Staff's Evaluation

In regards to EPZs, the Commission addressed the size of the EPZ in the matter of Long Island Lighting Company (CLI-87-12). The Commission stated, "the proper interpretation of the rule would call for adjustments to the exact size of the EPZ only on the basis of such straightforward administrative considerations as avoiding EPZ boundaries that run through the middle of schools, or hospitals, or that arbitrarily carve out small governmental jurisdictions. The goal is merely planning simplicity and avoidance of ambiguity as to the location of boundaries.

With such clarity, plans can be implemented with an understanding as to who is being directed to take particular protective actions. In addition, NUREG-0396 which formed the basis for the "EPZ" concept indicates that EPZ size and shape can be somewhat different than the 10-mile circular radius implies without compromising emergency planning goals, as evidenced by the statement in the report, "judgement ... will be used in determining the precise size and shape of the EPZs considering local conditions such as demography, topography, and land use characteristics, access routes, local jurisdictional boundaries, and arrangements with the nuclear facility operator for notification and response assistance.

The licensee provided the following additional information related to the protective measures that will be implemented for people just outside of the 10-mile EPZ if needed:

- If warranted the licensee has the capability to provide for Protective Action Recommendations if a release would go beyond 10 miles.
- The Gaston County Emergency Management Manger provided information regarding how the residents outside of the 10-mile EPZ would be notified if needed; they would be notified via Route alerting, Emergency Alert System, and reverse 911.

In addition, FEMA has also issued approval of the changes to the modification of the McGuire EPZ.

Also, given, that the CSX railroad right of way (tracks) dissects Mount Holly, is easily identifiable by the citizens of Mount Holly, is slightly outside of the 10-mile EPZ, and the current boundary is greater than 10 miles from the site and not defined by easily determined landmarks, the NRC staff finds the request to remove the small section of the EPZ to be consistent with the Commissions interpretation and FEMA's guidance. Therefore, the proposed change is acceptable.

4.0 CONCLUSION

The NRC staff finds that the McGuire Emergency Plan change meets the standards of 10 CFR 50.47(b) and (c) and the requirements of Appendix E of 10 CFR Part 50. Therefore, based on the considerations discussed above, the NRC staff concludes that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the approval of the proposed emergency plan changes will not be inimical to the common defense and security or to the health and safety of the public, and therefore, is acceptable.

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Date: February 4, 2004

McGuire Nuclear Station

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