ATTACHMENT I

PROPOSED TECHNICAL SPECIFICATION CHANGES

3/4.9.12 FUEL STORAGE - SPENT FUEL STORAGE POOL

LIMITING CONDITION FOR OPERATION

3.9.12 Fuel is to be stored in the spent fuel storage pool with:

a. The boron concentration in the spent fuel pool maintained at greater than or equal to 2000 ppm; and

b. Storage in Region 2 restricted to irradiated fuel which has decayed at least 16 days and one of the following:

1) Fuel which has been qualified in accordance with Table 3.9-1; or

2) Fuel which has been qualified by means of an analysis to assure that $K_{eff} \leq 0.95$ including all uncertainties at the 95/95 confidence level; or

3) Unqualified fuel stored in a checkerboard configuration. In the event checkerboard storage is used, one row between normal storage locations and checkerboard storage locations will be vacant.

APPLICABILITY:

During storage of fuel in the spent fuel pool.

ACTION:

a. Suspend all actions involving the movement of fuel in the spent fuel pool if it is determined a fuel assembly has been placed in the incorrect Region until such time as the correct storage location is determined. Move the assembly to its correct location before resumption of any other fuel movement.

b. Suspend all actions involving the movement of fuel in the spent fuel pool if it is determined the pool boron concentration is less than 2000 ppm, until such time as the boron concentration is increased to 2000 ppm or greater.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12a. Verify all fuel assemblies to be placed in Region 2 of the spent fuel pool are within the enrichment and burnup limits of Table 3.9-1 or that $K_{eff} \leq 0.95$ by checking the assemblies' design and burnup documentation or the assemblies' qualifying analysis documentation respectively.

b. Verify at least once per 31 days that the spent fuel pool boron concentration is greater than 2000 ppm.

Table 3.9-1

Minimum Burnup Versus Initial Enrichment for Region 2 Storage

Initial Enrichment w/o U-235	Assembly Burnup (GWD/MT)
1.4	0.00
1.5	2.50
1.6	5.00
1.7	6.65
1.8	8.30
1.9	9.95
2.0	11.60
2.1	13.20
2.2	14.60
2.3	16.00
2.4	17.40
2.5	18.80
2.6	20.20
2.7	21.40
2.8	22.60
2.9	23.90
3.0	25.20
3.1	26.60
3.2	27.80
3.3	28.93
3.4	30.07
3.5	31.20
3.6	32.26
3.7	33.32
3.8	34.38
3.9	35.44
4.0	36.50

3/4.9.9 and 3/4.9.10 WATER LEVEL - REACTOR VESSEL and STORAGE POOL

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the accident analysis.

3/4.9.11 FUEL HANDLING VENTILATION EXHAUST SYSTEM

The limitations on the Fuel Handling Ventilation Exhaust System ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal absorbers prior to discharge to the atmosphere. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the accident analyses. ANSI N510-1975 will be used as a procedural guide for surveillance testing. The methyl iodide penetration test criteria for the carbon samples have been made more restrictive than required for the assumed iodine removal in the accident analysis because the humidity to be seen by the charcoal adsorbers may be greater than 70% under normal operating conditions.

3/4.9.12 FUEL STORAGE - SPENT FUEL STORAGE POOL

The requirements for fuel storage in the spent fuel pool on 3.9.12 (a) and (b) ensure that: (1) the spent fuel pool will remain subcritical during fuel storage; and (2) a uniform boron concentration is maintained in the water volume in the spent fuel pool for reactivity control. The value of 0.95 or less for Keff which includes all uncertainties at the 95/95 probability/ confidence level as described in Section 9.1.2.3.1 of the FSAR is the acceptance criteria for fuel storage in the spent fuel pool. Table 3.9-1 is conservatively developed in accordance with the acceptance criteria and methodology referenced in Section 5.6 of the Technical Specifications. Storage in a checkerboard configuration in Region 2 meets all the acceptance criteria referenced in Section 5.6 of the Technical Specifications and is verified in a semi-annual basis after initial verification through administrative controls.

The Action Statement applicable to fuel storage in the spent fuel pool ensures that: (1) the spent fuel pool is protected from distortion in the fuel storage pattern that could result in a critical array during the movement of fuel; and (2) the boron concentration is maintained at 2000 ppm during all actions involving movement of fuel in the spent fuel pool.

The Surveillance Requirements applicable to fuel storage in the spent fuel pool ensure that: (1) fuel stored in Region 2 meets the enrichment and burnup limits of Table 3.9-1 or the $K_{eff} \leq 0.95$ acceptance criteria of a qualifying analysis; and (2) the boron concentration meets the 2000 ppm limit.

ATTACHMENT II

Technical Justification and Safety Analysis

The Limiting Conditions for Operation in McGuire's Technical Specification 3/4.9.12, Fuel Storage - Spent Fuel Storage Pool, are intended to ensure that the effective multiplication factor (K_{eff}) in the Spent Fuel Storage Pool Region 2 remains below or equal to 0.95 including all uncertainties at the 95/95 confidence level. The existing specifications restrict storage of fuel in Region 2 to irradiated fuel which has decayed at least 16 days and 1) fuel which has been qualified in accordance with Figure 3.9-2; or 2) fuel stored in a checkerboard configuration with one row between normal storage locations and checkerboard storage locations vacant. The proposed changes would replace Figure 3.9-2 with proposed Table 3.9-1 and would add a criticality analysis per assembly basis as a criteria for fuel storage in Region 2.

A. Criticality Analysis per Individual Basis

This proposed change seeks to add the capability to perform a safety analysis on individual fuel assemblies as an acceptance criteria for storage in Region 2 if at first they do not appear to meet proposed Table 3.9-1.

The design basis for preventing criticality outside the reactor is that including all uncertainties, there is a 95 percent probability at a 95 percent confidence level that the effective multiplication factor of the fuel assembly array will be less than 0.95. The acceptance criteria and methodology are referred in section 5.6 of the Technical Specifications and 9.12.3 of the FSAR. Generally, the acceptance criterion for postulated accident conditions is $K_{eff} < 0.99$. For storage pools, which contain dissolved boron, the use of the double contingency principle of ANSI N.16.1 - 1975 can be applied resulting in realistic initial conditions and ensuring that $K_{eff} << 0.95$ for postulated accidents. For simplicity, an acceptance criterion for all conditions is $K_{eff} \leq 0.95$.

Figure 3.9-2 was conservatively developed even with respect to the $K_{eff} \leq$ 0.95 acceptance criterion. Currently, the rack multiplication factor is 0.940 for the most reactive irradiated fuel permitted to be stored in the Spent Fuel Storage Pool Region 2. This multiplication factor includes all uncertainties and is obtained for pure water at a density of one gram per cubic centimeter. Existing Figure 3.9-2 and proposed Table 3.9-1 bound the results of the calculation. It is therefore reasonable to allow usage of the same methodology and acceptance criteria in a safety analysis on a per assembly basis which would assure that $K_{eff} \leq 0.95$ including all uncertainties at the 95/95 confidence level.

The proposed change will result in substantial storage space savings and in a more flexible and adequate usage of Region 2 of the Spent Fuel Storage Pool. The proposed change will not have a significant impact on safety or on the intended operation of the Spent Fuel Storage Pool. Regardless of whether a fuel assembly qualifies for storage in Region 2 in accordance with Proposed Table 3.9-1 or the proposed individual safety analysis, K_{eff} will be ≤ 0.95 at a 95/95 confidence level. Thus, no adverse safety considerations are introduced by this proposed change to the Technical Specifications.

B. Replacement of Figure 3.9-2 with Table 3.9-1

This proposed change to the McGuire Technical Specifications seeks to replace Figure 3.9-2 with proposed Table 3.9-1, Minimum Burnup versus Initial Enrichment for Region 2 Storage, to qualify fuel assemblies for storage in Region 2 of the Spent Fuel Storage Pool. The basis, methodology, and acceptance criteria considered in the formulation of Table 3.9-1 are consistent with those used in the formulation of Figure 3.9-2 and have been examined in part A of this Justification and Safety Analysis. As stated in part A, these considerations result in Figure 3.9-2 and thus proposed Table 3.9-1 being a very conservative acceptance criteria for fuel storage in Region 2.

The existing Technical Specification Figure 3.9-2 presents a difficulty in the qualification of those fuel assemblies which fall within the Figure 3.9-2 curve separating the acceptable and unacceptable regions for storage in Region 2. Because of the thickness of this curve, certain ambiguity is introduced in the qualification of such assemblies for storage in Region 2. Proposed Table 3.9-1 would provide a more adequate means of qualifying fuel assemblies for storage in Region 2 since it would eliminate the uncertainty associated with existing Figure 3.9-2. This proposed change would result in a more reliable acceptance criteria for fuel storage in the Spent Fuel Storage Pool Region 2.

Proposed Table 3.9-1 was developed from 12 break points used to develop Figure 3.9-2. The remaining 15 points in Table 3.9-1 were generated by linearly interpolating between consecutive data points. Linear interpolation yields acceptable or conservative results with respect to the burnup credit curve.

The proposed Table 3.9-1 will eliminate the ambiguity present in the qualification of fuel for storage in Region 2 for those borderline cases where Figure 3.9-2 does not provide an adequate acceptance criteria. Since the same methodology and acceptance criteria are used in the development of Figure 3.9-2 and proposed Table 3.9-1, no adverse safety considerations are introduced and no safety margin is reduced.

As the result of the proposed changes in Part A and B of this Analysis, Surveillance Requirement 4.9.12 (a) is appropriately revised to reflect the proposed qualifying criticality analysis and the proposed substitution of Figure 3.9-2 with Table 3.9-1 as acceptance criteria for fuel storage in Region 2.

C. Bases to Technical Specification 3/4.9.12

This proposed change to the McGuire Technical Specifications seeks to provide Bases to Technical Specification 3/4.9.12, Fuel Storage - Spent Fuel Storage Pool. Proposed Bases 3/4.9.12 describes the purpose and design basis associated with the Limiting Conditions for Operation and Surveillance Requirements for Technical Specification 3/4.9.12. The new basis are intended to supply the reasons for Technical Specification 3/4.9.12 and in no way do they modify or are part of the Technical Specification in question.

ATTACHMENT III

Analysis of Significant Hazards Consideration:

Pursuant to the requirements of 10 CFR 50.91, this analysis provides a determination that the proposed amendment of the Technical Specification does not involve any significant hazards consideration, as defined by 10 CFR 50.92. Standards for determination that a proposed amendment involves no significant hazards considerations are if 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 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety.

The proposed changes to the Facility Operating License are supported by the Technical Justification and Safety Analysis provided in Attachment II. The proposed changes to the Technical Specifications are intended to: 1) optimize space availability in the Spent Fuel Storage Pool Region 2 by introducing an analysis on a per assembly basis as an acceptance criterion for storage of fuel in Region 2; and 2) replace Figure 3.9-2 with proposed Table 3.9-1 as an acceptance criteria for storage of fuel in Region 2.

The proposed changes do not involve an increase in the probability or consequences of any previously evaluated accident. The methodology and acceptance criteria proposed to qualify fuel for storage in Region 2 remain the same and the $K_{eff} \leq 0.95$ criteria is also satisfied. All requirements in the FSAR and Technical Specifications regarding fuel storage in Region 2 are satisfied as well.

The proposed changes do not create the possibility of a new or different kind of accident than any previously evaluated since there will be no physical changes made to any plant system. Also, the addition of a safety analysis on individual fuel assemblies and of proposed Table 3.9-1 as acceptance criteria for fuel storage in Region 2 do not create the possibility of a new or different accident than any previously evaluated since they are based on the acceptance criteria and methodology referenced in Section 5.6 of the Technical Specifications.

The proposed changes do not involve a significant reduction in a margin of safety. The proposed safety analysis on individual fuel assemblies is based in the $K_{eff} \leq 0.95$ criteria and in the methodology referenced in Section 5.6 of the Technical Specifications. Proposed Table 3.9-1 is based in an even more conservative acceptance criteria of $K_{eff} \leq 0.94$ and in the methodology referenced in Section 5.6 of the Technical Specifications which are the same basis used to develop existing Figure 3.9-2. All applicable safety analysis have been reviewed and all acceptance criteria met.

Thus, in summary the proposed amendment would not:

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

2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or

3. Involve a significant reduction in a margin of safety.

Based upon the preceding analysis, Duke Power Company concludes that the proposed amendments do not involve a significant hazards consideration.