PRIORITY Normal

DISPOSITION OF THE ORIGINAL DOCUMENT WILL BE TO THE TRANSMITTAL SIGNATURE UNLESS RECIPIENT IS OTHERWISE IDENTIFIED BELOW

1) 02049 NGO PRA MANAGER EC08I
2) 02188 NPA MANAGER EC05N
3) 02467 ELECT. LICENSING LIBRARY EC050
4) 02532 MCG NRC INSP MG01A
5) 02546 R L MORGAN MG01WC
6) 03044 MCG DOC CNTRL MISC MAN MGO1DM
7) 03102 H L MASSEY OPS PROC GP MG03OT
8) 03379 D E CALDWELL MG01MM
9) 03447 HARRY J SLOAN MG01RP
10) 03614 MCG OPS PROCEDURE GP MG01OP
11) 03744 OPS TRNG MGR. MG03OT
12) 03759 U S NUCLEAR REG WASH, DC
13) 04809 MCG PLANT ENG. LIBR. MG05SE
14) 05160 P T VU MG01RC
15) 05162 MCG SHIFT WORK MGRS MG01OP

Duke Power Company
DOCUMENT TRANSMITTAL FORM

REFERENCE

MCGUIRE NUCLEAR STATION

SELECTED LICENSEE COMMITMENTS

MANUAL

Date: 01/09/01

Document Transmittal #: DUK010090026

QA CONDITION ☐ Yes ■ No

OTHER ACKNOWLEDGEMENT REQUIRED ■ Yes

IF QA OR OTHER ACKNOWLEDGEMENT REQUIRED, PLEASE ACKNOWLEDGE RECEIPT BY RETURNING THIS FORM TO:

Duke Power Company
P.O. Box 12700
Document Management MG01 MOD
Hagers Ferry Road
Huntersville, N.C. 28078

Rec'd By ______________________

Date ______________________

DOCUMENT NO	QA COND	REV #/ DATE	DISTR CODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
LOEP	NA	007 01/04/01	MADM-03A	V1	V1	V1	V1	V1	V1	V1	V1	V1	V1	V2	V8	V2	V1	V1	46
SLC 16.9.20	NA	008 01/04/01																	
SLC 16.9.24	NA	000 01/04/01																	

REMARKS: PLEASE UPDATE YOUR MANUAL ACCORDINGLY

EB

H B BARRON
VICE PRESIDENT
MCGUIRE NUCLEAR STATION

BY:

BONNIE C BEAVER MG01RC BCB/CMK

A001

January 4, 2001

MEMORANDUM

To: All McGuire Nuclear Station Selected Licensee Commitments (SLC) Manual Holders

Subject: McGuire SLC Manual Update

Please revise your copy of the manual as follows:

REMOVE	INSERT
List of Affected Sections Revision 6	List of Affected Sections Revision 7
SLC 16.9.20 Revision 1	SLC 16.9.20 Revision 8
	SLC 16.9.24 Revision 0 (NEW SLC)

Please call me if you have questions

Bonnie Beaver
Regulatory Compliance
875-4180

SLC LIST OF AFFECTED SECTIONS

SECTION	REVISION NUMBER	DATE
16.1	REVISION 0	12/14/99
16.2	REVISION 0	12/14/99
16.3	REVISION 0	12/14/99
16.4	Not Issued	
16.5.1	REVISION 0	12/14/99
16.5.2	REVISION 0	12/14/99
16.5.3	REVISION 0	12/14/99
16.5.4	REVISION 7	09/14/00
16.5.5	REVISION 0	12/14/99
16.5.6	REVISION 0	12/14/99
16.5.7	REVISION 0	12/14/99
16.5.8	REVISION 0	12/14/99
16.5.9	REVISION 0	12/14/99
16.5.10	REVISION 0	12/14/99
16.6.1	REVISION 0	12/14/99
16.6.2	REVISION 0	12/14/99
16.6.3	REVISION 0	12/14/99
16.7.1	REVISION 0	12/14/99
16.7.2	REVISION 0	12/14/99
16.7.3	REVISION 0	12/14/99
16.7.4	REVISION 1	4/11/00
16.7.5	REVISION 0	12/14/99
16.7.6	REVISION 0	12/14/99
16.7.7	REVISION 0	12/14/99
16.7.8	REVISION 0	12/14/99
16.7.9	REVISION 0	12/14/99
16.7.10	REVISION 0	12/14/99
16.8.1	REVISION 2	4/11/00
16.8.2	REVISION 0	12/14/99
16.8.3	REVISION 2	4/11/00
16.9.1	REVISION 6	9/14/00
16.9.2	REVISION 5	5/24/00
16.9.3	REVISION 0	12/14/99
16.9.4	REVISION 1	03/02/00
16.9.5	REVISION 0	12/14/99
16.9.6	REVISION 0	12/14/99
16.9.7	REVISION 1	4/11/00
16.9.8	REVISION 0	12/14/99
16.9.9	REVISION 0	12/14/99
16.9.10	REVISION 0	12/14/99
16.9.11	REVISION 0	12/14/99
16.9.12	REVISION 0	12/14/99
16.9.13	REVISION 0	12/14/99
16.9.14	REVISION 0	12/14/99
16.9.15	REVISION 4	6/20/00
16.9.16	REVISION 0	12/14/99
16.9.17	REVISION 0	12/14/99

SLC LIST OF AFFECTED SECTIONS

SECTION	REVISION NUMBER	DATE
16.9.18	REVISION 0	12/14/99
16.9.19	REVISION 0	12/14/99
16.9.20	REVISION 8	11/30/00
16.9.21	REVISION 0	12/14/99
16.9.22	REVISION 0	12/14/99
16.9.23	Not Issued	
16.9.24	REVISION 0	12/18/00
16.10.1	REVISION 0	12/14/99
16.11.1	REVISION 0	12/14/99
16.11.2	REVISION 0	12/14/99
16.11.3	REVISION 0	12/14/99
16.11.4	REVISION 0	12/14/99
16.11.5	REVISION 0	12/14/99
16.11.6	REVISION 0	12/14/99
16.11.7	REVISION 0	12/14/99
16.11.8	REVISION 0	12/14/99
16.11.9	REVISION 0	12/14/99
16.11.10	REVISION 0	12/14/99
16.11.11	REVISION 0	12/14/99
16.11.12	REVISION 0	12/14/99
16.11.13	REVISION 0	12/14/99
16.11.14	REVISION 0	12/14/99
16.11.15	REVISION 0	12/14/99
16.11.16	REVISION 1	4/11/00
16.11.17	REVISION 1	4/11/00
16.11.18	REVISION 0	12/14/99
16.11.19	REVISION 0	12/14/99
16.11.20	REVISION 0	12/14/99
16.12.1	REVISION 0	12/14/99
16.12.2	REVISION 0	12/14/99
16.13.1	REVISION 0	12/14/99
16.13.2	REVISION 0	12/14/99
16.13.3	REVISION 0	12/14/99
16.14.1	REVISION 0	12/14/99

16.9 AUXILIARY SYSTEMS

16.9.20 Crane Travel – Spent Fuel Storage Pool Building

COMMITMENT The following requirements shall be met:

a. Loads in excess of 3000 pounds shall be prohibited from travel over fuel assemblies in the storage pool,

b. Spent fuel casks shall be carried along the path outlined in Figure 16.9.20-1 in the fuel pit and fuel pool area, and

c. The requirements of LCO 3.8.2 shall be met whenever loads are moved over the spent fuel storage pool.

-------------------------------------NOTE-------------------------------------
Spent fuel pool weir gates may be moved over the stored fuel provided the decay time is $\geq$ 17.5 days since last being part of a core at power.

APPLICABILITY With fuel assemblies in the storage pool.

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Commitment not met.	A.1 Place the crane load in a safe condition and suspend movement of loads over the spent fuel pool.	Immediately

TESTING REQUIREMENTS

TEST	FREQUENCY
TR 16.9.20.1 Verify weight of each load, other than a fuel assembly and control rod, is < 3000 pounds.	Prior to moving the load over fuel assemblies

NOTE: Cask may move as shown in the east or west directions inside the Cask Pit once the cask has completely cleared the Cask Pit north wall.

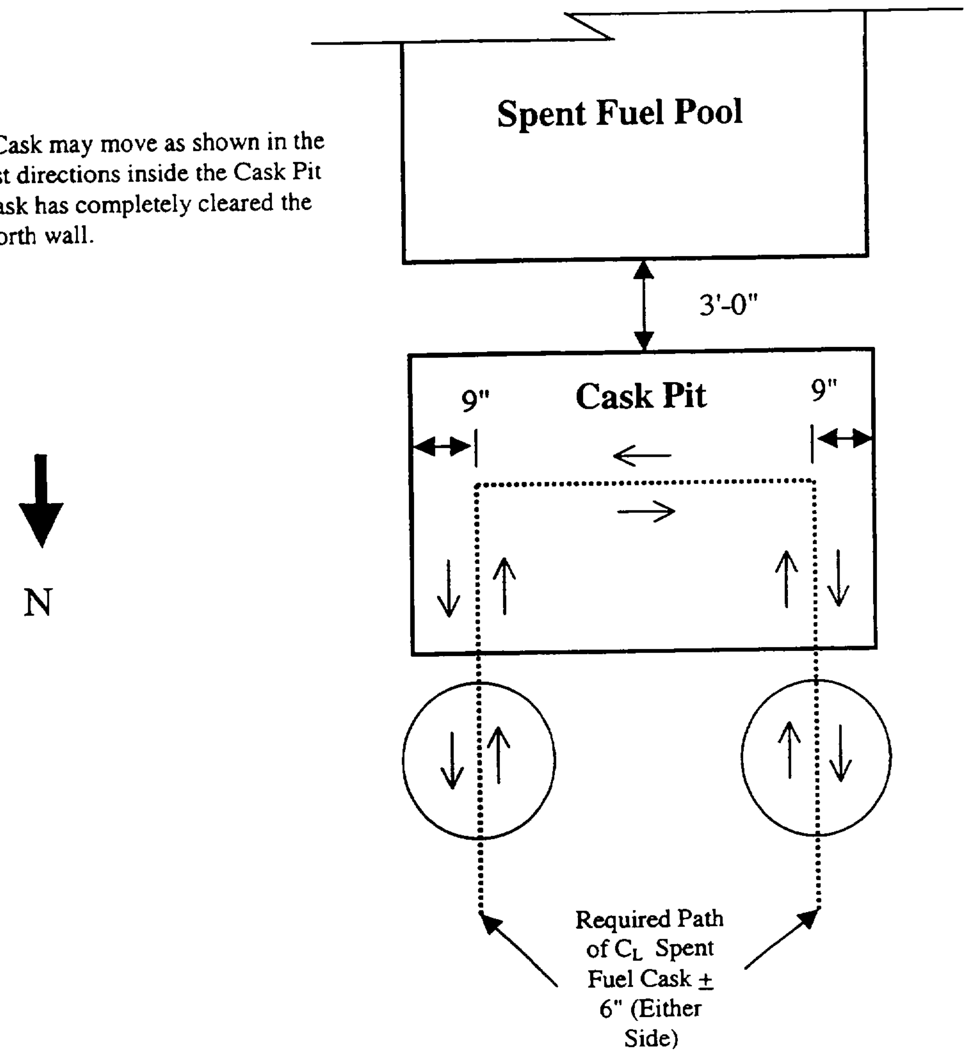


Figure 16.9.20-1

REQUIRED PATH FOR MOVEMENT OF SPENT FUEL CASKS

BASES

The restriction on movement of loads in excess of the nominal weight of a fuel and control rod assembly and associated handling tool over other fuel assemblies in the storage pool ensures that in the event this load is dropped: (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the accident analysis. The requirement for following the load path shown in Figure 16.9.20-1 assumes that the cask can not fall into the spent fuel pool.

REFERENCES

None

16.9 AUXILIARY SYSTEMS

16.9.24 Spent Fuel Pool Storage Rack Poison Material

COMMITMENT

a. The Region 1 panel average storage rack poison material Boron 10 areal density shall be greater than or equal to:

0.005 gm B_{10}/cm^2 for Region 1A
0 gm B_{10}/cm^2 for Region 1B

b. The Region 2 panel average storage rack poison material Boron 10 areal density shall be greater than or equal to:

0.003 gm B_{10}/cm^2 for Region 2A
0 gm B_{10}/cm^2 for Region 2B

APPLICABILITY When a fuel assembly is stored in a spent fuel rack cell location.

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Panel average storage rack poison material Boron 10 areal density not within limits.	A.1 Perform ITS SR 3.7.14.1	1 hour AND Every 24 hours thereafter until the affected fuel assembly is moved.
	AND	
	A.2.1 Verify that the fuel assembly in the affected location meets the requirements of ITS LCO 3.7.15(b) for Region 1. OR	1 hour

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued).	A.2.2 Verify that the fuel assembly in the affected location meets the requirements of ITS LCO 3.7.15(d) for Region 2. <u>OR</u> A.2.3 Initiate actions to move the affected fuel assembly to an acceptable location.	1 hour Immediately

TESTING REQUIREMENTS

TEST		FREQUENCY
TR 16.9.24.1	Verify that the panel average spent fuel pool storage rack poison material is within limits.	3 years

BASES

The McGuire spent fuel storage racks contain Boraflex neutron-absorbing panels that surround each storage cell on all four sides (except for peripheral sides). The function of these Boraflex panels is to ensure that reactivity of the stored fuel assemblies is maintained within required limits. Boraflex, as manufactured, is a silicon rubber material that retains a powder of boron carbide (B4C) neutron absorbing material. The Boraflex panels are enclosed in a formed stainless steel wrapper sheet that is spot-welded to the storage tube. The wrapper sheet is bent at each end to complete the enclosure of the Boraflex panel. The Boraflex panel is contained in the plenum area between the storage tube and the wrapper plate. Since the wrapper plate enclosure is not sealed, spent fuel pool water is free to circulate through the plenum.

It has been observed that after Boraflex receives a high gamma dose from the stored irradiated fuel (>10^{10} rads) it can begin to degrade and dissolve in the wet environment. The potential degradation mechanisms with respect to boraflex in spent fuel storage racks include:

(1) gamma radiation-induced shrinkage of boraflex and the potential for developing tears or gaps in the material, and

(2) gradual long-term boraflex degradation over the intended service life of the racks as a result of gamma irradiation and exposure to the spent fuel pool environment.

BASES (continued)

Thus, the B4C poison material can be removed, thereby reducing the poison worth of the Boraflex sheets. This phenomenon is documented in NRC Generic Letter 96-04, "Boraflex Degradation in Spent Fuel Pool Storage Racks". To address this degradation, the spent fuel racks have been analyzed taking credit for soluble boron as allowed in WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology," Revision 1, November 1996. This methodology ensures that the spent fuel rack multiplication factor, k_{eff} is less than or equal to 0.95. Codes, methods and techniques used in the McGuire criticality analysis are used to satisfy this k_{eff} criterion. The spent fuel storage racks are analyzed to allow storage of fuel assemblies with enrichments up to a maximum of 4.75 weight percent Uranium-235 while maintaining $k_{eff} \leq 0.95$ including uncertainties, tolerances, bias, and credit for soluble boron. Soluble boron credit is used to offset uncertainties, tolerances, and off-normal conditions and to provide subcritical margin such that the spent fuel pool k_{eff} is maintained less than or equal to 0.95. The soluble boron concentration required to maintain k_{eff} less than or equal to 0.95 under normal conditions is 730 ppm. In addition, sub-criticality of the pool ($k_{eff} < 1.0$) is assured on a 95/95 basis without the presence of the soluble boron in the pool. Credit is taken for reactivity depletion due to fuel burnup and reduced credit for the Boraflex neutron absorber panels.

The limits specified for the panel average storage rack poison material Boron 10 areal density ensures the k_{eff} of the spent fuel pool will always remain < 1.00, assuming the pool to be flooded with unborated water. The specified limit of Boron 10 areal density in boraflex preserves the assumptions used in the analyses of the potential criticality accident scenarios. These limits are the minimum required concentration for fuel assembly storage. The criticality analysis performed shows that the acceptance criteria for criticality is met for the storage of fuel assemblies with soluble boron credit, reduced credit for the Boraflex panels and the storage configurations and enrichment limits Specified by ITS LCO 3.7.15. The storage configuration requirements specified by ITS LCO 3.7.15 establish four regions within the spent fuel pool storage racks. Figure 16.9.24-1 illustrates the four regions for the Unit 1 spent fuel pool and Figure 16.9.24-2 illustrates the four regions for the Unit 2 pool. The limits specified are not applicable if a storage cell location does not contain a fuel assembly.

The REQUIRED ACTIONS associated with this Selected Licensee Commitment (SLC) are designed to ensure that an unplanned criticality event cannot occur as a result of degraded boraflex conditions. REQUIRED ACTION A.1 verifies the Spent Fuel Pool boron concentration to be within Technical Specification 3.7.14 limits. These limits are based on the cycle-specific Core Operating Limits Requirements (COLR) document. The COLR Spent Fuel Pool boron concentration cannot be less than 2675 ppm soluble boron for any specific cycle (note that the initial boron concentration used in the Spent Fuel Pool boron dilution analysis is 2475 ppm soluble boron). If ITS SR 3.7.14.1 indicates boron concentrations less than the acceptable level, the associated REQUIRED ACTIONS are to immediately suspend movement of fuel assemblies in the pool area and to immediately initiate boron additions to raise the boron concentration to acceptable levels. REQUIRED ACTIONS A.2.1 and A.2.2 associated with this SLC determine if the assembly can be qualified for storage in Region 1B or Region 2B. If the assembly cannot be stored in one of these regions, REQUIRED ACTION A.2.3 requires that actions be initiated immediately to move the affected fuel assembly to an acceptable location. There may be circumstances that will prevent the movement of the affected assembly in a reasonable time period. For example, if the pool is nearly full, there may not be enough spaces available to meet the required storage

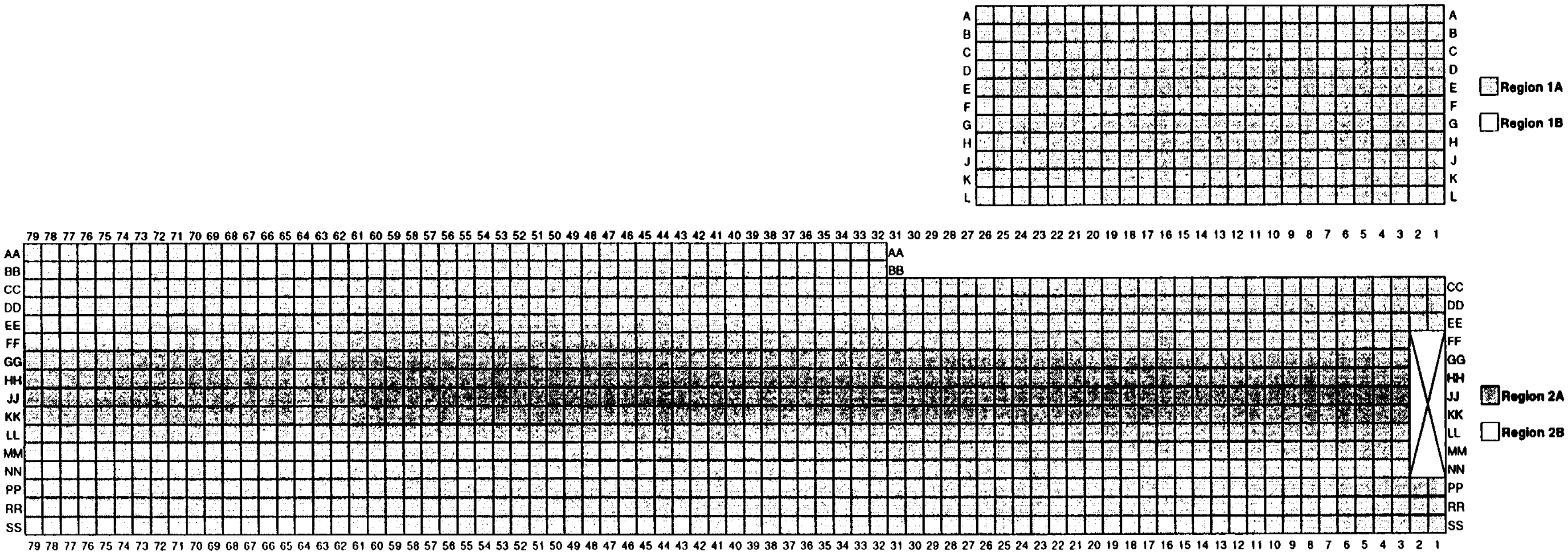
BASES (continued)

configurations of ITS LCO 3.7.15. In this case, it is acceptable to continue REQUIRED ACTION A.1 until the affected fuel assembly can be moved to an acceptable location. The daily verification of boron concentration per ITS SR 3.7.14.1 ensures the assumptions used in the associated criticality analyses are maintained. There is a large amount of margin between the COLR boron concentration and the boron concentration needed to maintain subcritical conditions in the Spent Fuel Pool. Daily verifications are considered to be adequate to ensure that no dilution evolution could go undetected for an extended period resulting in boron concentrations less than the minimum amounts necessary for maintaining subcritical conditions.

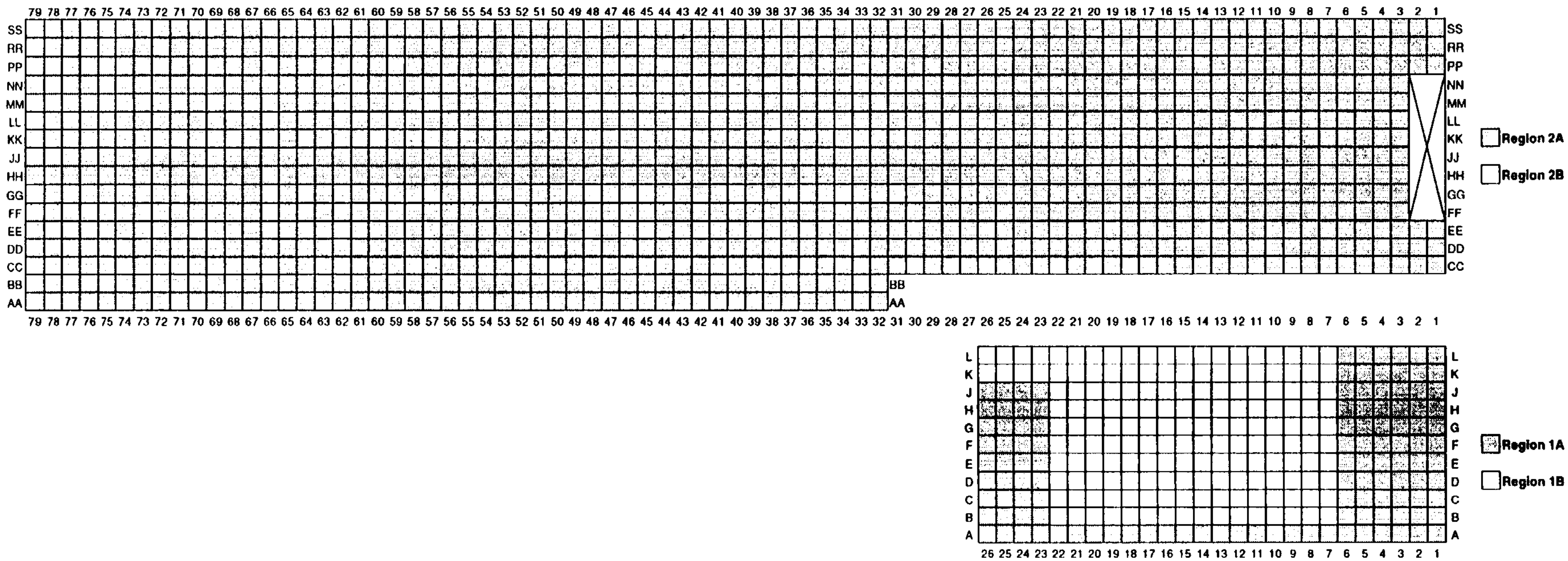
The testing requirements will verify that the Boron 10 areal density is within acceptable limits. The preferred method for verifying the Boron 10 areal density would be in-situ testing at least every three years. Testing may be performed more frequently based on engineering judgment, spent fuel pool water chemistry, and modeling projections of boraflex degradation.

FIGURE 16.9.24-1

UNIT 1 SPENT FUEL POOL SUB-REGION MAP



UNIT 2 SPENT FUEL POOL SUB-REGION MAP



BASES (continued)

REFERENCES

1. UFSAR, Section 9.1.2.
2. Issuance of Amendments, McGuire Nuclear Station, Units 1 and 2 (TAC NOS. M89744 and M89745), November 6, 1995.
3. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).
4. UFSAR, Section 15.7.4.
5. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).
6. NRC Generic Letter 96-04: Boraflex Degradation in Spent Fuel Pool Storage Racks, June 26, 1996.
7. WCAP-14416-NP-A, Westinghouse Spent Fuel Rack Criticality Analysis Methodology, Revision 1, November 1996.
8. Issuance of Amendments, McGuire Nuclear Station, Units 1 and 2 (TAC NOS. MA9730 and MA9731), November 27, 2000.