REGIS T. REPKO
Vice President
McGuire Nuclear Station

Duke Energy
MG01VP / 12700 Hagers Ferry Rd.
Huntersville, NC 28078

980-875-4111
980-875-4809 fax
regis.repko@duke-energy.com

September 16, 2010

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: Duke Energy Carolinas, LLC (Duke Energy)
McGuire Nuclear Station, Units 1 and 2
Docket Nos. 72-38, 50-369, 50-370
Request for Exemption from Certain Requirements of
10 CFR 72.212(a)(2), 72.212(b)(2)(i), 72.212(b)(7) and 72.214

References:
(1) NRC Certificate of Compliance for Spent Fuel Storage Casks Issued to NAC International Inc. (NAC), Certificate No. 1031, MAGNASTOR®, Amendment No. 1, Effective Date August 30, 2010
(2) NAC International Application for MAGNASTOR® Amendment No. 2, March 22, 2010, NRC Docket No. 72-1031, TAC No. L24432

This letter requests U.S. Nuclear Regulatory Commission (NRC) approval of an exemption to certain requirements of 10 CFR 72.212(a)(2), 72.212(b)(2)(i), 72.212(b)(7) and 72.214 pursuant to 10 CFR 72.7. The regulations require, in part, compliance to the terms and conditions of the MAGNASTOR® Certificate of Compliance (Reference 1). The Certificate of Compliance conditions require the general licensee to meet the requirements of the Technical Specifications (TS) for the MAGNASTOR® System (Appendix A to the Certificate of Compliance). The proposed exemption pertains to the requirements of TS 5.1.2 regarding surface contamination limits for the MAGNASTOR® Transportable Storage Canister (TSC).

Based on the details provided in Attachment 1, Duke Energy believes that the exemption request is justified and will reduce the risk of substantial occupational exposure during loading operations of the MAGNASTOR® System at Duke Energy's McGuire Nuclear Station (MNS).

Loading and storage of the MAGNASTOR® casks under the provisions of the exemption, if approved, will be consistent with elements of a pending license amendment request submitted by NAC (Reference 2). Attachment 2 provides the applicable portion of the pending changes to TS Limiting Condition for Operation (LCO) 3.3.2, "Transportable Storage Canister (TSC) Surface Contamination," and TS 5.1, "Radioactive Effluent Control Program," as presented to the NRC in Reference 2.

NMSS01

The MNS Independent Spent Fuel Storage Installation (ISFSI) currently contains a number of Transnuclear TN-32A casks and NAC International UMS® casks. For additional storage capacity, Duke Energy plans to add MAGNASTOR® casks to the MNS ISFSI, with the first cask anticipated to be loaded in July 2011. NRC approval of this exemption is requested by April 30, 2011 to allow reasonable time for finalization of the site-specific cask loading procedures, including integration of the revised Technical Specification limits, prior to the planned loading campaign.

NRC approval of the aforementioned license amendment (Reference 2) would obviate the need for this exemption. However, it is not anticipated that the license amendment will be approved and effective prior to April 30, 2011; hence, this exemption is necessary. The exemption would continue to apply to all MAGNASTOR® casks loaded under Certificate of Compliance Amendment No. 1. However, following NRC approval and subsequent implementation at MNS of Amendment No. 2, the exemption would not be required for future cask loadings.

There are no regulatory commitments made in this submittal.

If you have any questions or require additional information, please contact M. K. Leisure at (980) 875-5171.

Sincerely,

Regis T. Repko

Attachments:

1. Request for Exemption from Certain Requirements of Title 10 of Code of Federal Regulations Part 72.212(a)(2), 72.212(b)(2)(i), 72.212(b)(7) and 72.214
2. Pending Changes to MAGNASTOR® Certificate of Compliance Appendix A, Technical Specifications

xc:

L. A. Reyes, Region II Administrator
U.S. Nuclear Regulatory Commission
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, GA 30303-1257

J. H. Thompson, Project Manager
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Mail Stop O-8G9A
Rockville, MD 20852-2738

C. Haney, Director
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Mail Stop EBB 1
Rockville, MD 20852-2738

E. J. Benner, Chief - Licensing Branch
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Mail Stop E3 D2M
Rockville, MD 20852-2738

J. B. Brady
NRC Senior Resident Inspector
McGuire Nuclear Station

Robert P. Carrion
Region II
Division of Reactor Safety

Cecil A. Fletcher II
Region II
Division of Reactor Safety

A. L. Patko
Director, Licensing Engineering
NAC International, Inc.
3930 East Jones Bridge Road, Suite 200
Norcross, GA 30092

Request for Exemption from Certain Requirements of Title 10 of Code of Federal Regulations Part 72.212(a)(2), 72.212(b)(2)(i), 72.212(b)(7) and 72.214

1. Request for Exemption

Duke Energy hereby requests an exemption from certain requirements of 10 CFR 72.212(a)(2), 72.212(b)(2)(i), 72.212(b)(7) and 72.214 that require compliance with the terms and conditions of the MAGNASTOR® Certificate of Compliance (Reference 1). This exemption, if approved, would apply to all casks loaded under Certificate of Compliance Amendment No. 1. However, the exemption would not be required for future cask loadings following NRC approval and implementation of the license amendment proposed by NAC (Reference 2).

2. Background

The Certificate of Compliance conditions require the general licensee to meet the requirements of the Technical Specifications for the MAGNASTOR® System (Appendix A to the Certificate of Compliance).

Technical Specification (TS) 5.1, "Radioactive Effluent Control Program," Paragraph 5.1.2, requires that a program be established to monitor ISFSI effluents if established surface contamination limits exceed the values specified in Regulatory Guide (RG) 1.86 (Reference 3). RG 1.86 limits the acceptable surface contamination levels for removable contamination to 1,000 dpm/100 cm^2 from beta and gamma sources, and 20 dpm/100 cm^2 from alpha sources. Specifically, Duke Energy requests an exemption from TS 5.1.2. In lieu of this requirement, Duke Energy is requesting to apply the provisions of TS 5.1.2 and TS 5.1.3, and Limiting Condition for Operation (LCO) 3.3.2 and its associated Surveillance Requirement (SR) 3.3.2, as proposed in the Reference 2 license amendment request.

As shown in Attachment 2, LCO 3.3.2 allows removable contamination levels on the exterior surfaces of the TSC not to exceed:

a. 10,000 dpm/100 cm^2 from beta and gamma sources; and

b. 100 dpm/100 cm^2 from alpha sources.

Consistent with SR 3.3.2, these limits may be verified by either direct or indirect methods. A "direct" method entails taking a smear from the exterior surface of the Transportable Storage Canister (TSC). An example of an "indirect" method is taking a smear from the interior surface of the transfer cask after the loaded TSC has been removed.

As also shown in Attachment 2, TS 5.1.2 notes that the MAGNASTOR® System does not create any radioactive materials or have any radioactive waste treatment systems, and hence, specific operating procedures for the control of radioactive effluents are not required. TS 5.1.2 further states that LCO 3.3.2 provides assurance that excessive surface contamination is not available

for release as a radioactive effluent. TS 5.1.3 states that each general licensee may incorporate MAGNASTOR® System operations into their environmental monitoring program for 10 CFR Part 50 operations.

A review of operating experience from two prior loading campaigns (16 casks total) at MNS using the NAC International UMS® System shows that removable surface contamination levels exceeded 1,000 dpm/100 cm^2 from beta and gamma sources for six casks, with a maximum level of 5,000 dpm/100 cm^2. Since the MAGNASTOR® System procedures and contamination minimization equipment will be similar to the UMS® System procedures and equipment, it is anticipated that removable surface contamination levels in excess of the current limits imposed by TS 5.1.2 will be experienced when using the MAGNASTOR® System. Hence, absent NRC approval of this exemption request, additional decontamination efforts would be necessary, resulting in additional occupational exposure and additional cask system handling operations, whereas, as shown below, the exemption introduces no undue risk to the public health and safety.

3. Justification for Granting the Exemption

The specific requirements for granting exemptions to 10 CFR Part 72 licensing requirements are set forth in 10 CFR 72.7, "Specific Exemptions," which states: "The Commission may, upon application by any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest." The following factors are relevant to this exemption request:

A. The ISFSI regulations cited in this exemption request, 10 CFR 72.212(a)(2), 72.212(b)(2)(i), 72.212(b)(7) and 72.214, are contained within 10 CFR Part 72 of the Commission's regulations. The Commission has the legal authority to issue exemptions for the MNS ISFSI as provided in §72.7.

B. The requested exemption introduces no undue risk to the public health and safety. The MAGNASTOR® System Final Safety Analysis Report (FSAR), Revision 0 (Reference 6), provides an analysis in Section 5.6.5, "Surface Contamination Release," for the offsite release exposures from particulate contamination conservatively evaluated at a 100 m distance. The evaluation assumes residual removable contamination of 20,000 dpm/100 cm^2 from beta-gamma sources and 200 dpm/100 cm^2 from alpha sources. The levels of contamination assumed in this evaluation are a factor of two greater than the limits that would apply if the proposed exemption request were approved. The evaluation assumed that 100% of the surface area of a single TSC is covered with the above removable contamination levels. A conservative release fraction of 1% was applied. The evaluation results, as presented in FSAR Table 5.6.5-3, "Dose Summary at 100 meters from TSC Surface Contamination Release," and projected for eight casks, are as follows:

Source	Organ/Whole Body	Exposure (mrem) per cask	Exposure (mrem) 8 casks *
β-γ	Skin Dose (β-γ)	1.33E-06	1.06E-05
	Lung Dose (β-γ)	8.03E-04	6.42E-03
	Whole Body Dose (β-γ)	1.38E-04	1.10E-03
α	Bone Surface Dose (α)	5.05E-02	4.04E-01
	Lung Dose (α)	7.52E-03	6.02E-02
	Whole Body Dose (α)	2.79E-03	2.23E-02
Total	Skin Dose (β-γ)	1.33E-06	1.06E-05
	Bone Surface Dose (α)	5.05E-02	4.04E-01
	Whole Body Dose (α + β-γ)	2.93E-03	2.34E-02
	Lung Dose (α + β-γ)	8.32E-03	6.66E-02

* *Three* MAGNASTOR® *System casks are scheduled to be loaded prior to the anticipated effective date of Amendment No. 2. For conservatism, the final column of the table reflects eight casks.*

It is concluded that the listed removable contamination levels do not represent a significant exposure contribution at the site boundary. The limits in SR 3.3.2, as proposed in the Reference 2 license amendment request, would be bounded by these doses.

C. The requested exemption is consistent with providing for the common defense and security. The MNS ISFSI will continue to be physically protected under Duke Energy's Physical Security Plan, and the exemption request does not affect the confinement of the spent fuel stored at the ISFSI facility.

D. Duke Energy seeks an exemption from the Commission's rules cited to allow the ability to load spent fuel into the MAGNASTOR® TSCs with a minimum radiological exposure to the workers handling, preparing, and transferring the TSCs. Based on calculated values of surface transfer cask dose rates, Duke Energy can project occupational exposures. To minimize such exposures, the transfer of the TSCs from the fuel pool to the MAGNASTOR® concrete cask must be performed in an expeditious manner with the minimum required personnel. Applying unnecessarily low removable contamination limits could result in the need to perform additional handling and decontamination efforts, resulting in increased personnel exposure. Requiring smears to be taken directly from the exterior surface of the TSC (rather than allowing indirect methods to verify that the contamination level is within limits) also has the potential to significantly increase personnel exposure.

4. Conclusion

Duke Energy concludes that the requested exemption from certain requirements of the 10 CFR 72.212(a)(2), 72.212(b)(2)(i), 72.212(b)(7) and 72.214 regulations, allowing the TSC contamination limits, as verified by either direct or indirect methods, to be established at 10,000 dpm/100 cm^2 from beta-gamma sources and 100 dpm/100 cm^2 from alpha sources, and

allowing the use of the provisions of TS 5.1.2 and TS 5.1.3 of proposed Amendment No. 2 to Certificate of Compliance No. 1031, is justified. Such an exemption meets the specific exemption requirements of 10 CFR 72.7. This requested exemption is authorized by law, will not endanger life or property, and is consistent with the common defense and security. Furthermore, granting the exemption is in the public interest in that avoidance of potential excessive radiological exposure to workers during upcoming cask loading campaigns could be achieved if the storage canisters were allowed to be stored with higher surface contamination, as verified by either direct or indirect methods.

5. Environmental Consideration

Pursuant to the provisions of 10CFR 72.7, Duke Energy is requesting exemption from certain requirements under the 10 CFR 72.212(a)(2), 72.212(b)(2)(i), 72.212(b)(7) and 72.214 regulations. If the proposed exemption is approved, the allowable TSC surface contamination limits will be increased, but will remain below the limits assumed in the MAGNASTOR® FSAR. The evaluation described in the FSAR concludes that the removable contamination levels do not represent a significant exposure contribution at the site boundary. Hence, the proposed exemption will not significantly increase public radiation exposure. In addition, the proposed exemption does not increase occupational radiation exposure, and rather, under the circumstances discussed above will reduce such exposure. Lastly, the proposed exemption does not affect the type of radioactive effluents or the quantity or type of nonradioactive effluents entering the environment. Therefore, there is no significant environmental effect associated with the proposed exemption.

6. Precedent

A similar exemption was granted to Maine Yankee Atomic Power Company (References 4 and 5) for its NAC- UMS® loading campaign.

The surface contamination limits and radioactive effluent control program provisions that will be utilized if the proposed exemption is approved are consistent with similar limits and provisions for the NAC- UMS® System, Certificate of Compliance No. 1015, (Reference 7).

7. References

1. NRC Certificate of Compliance for Spent Fuel Storage Casks Issued to NAC International Inc. (NAC), Certificate No. 1031, MAGNASTOR®, Amendment No. 1, Effective Date August 30, 2010
2. NAC International Application for MAGNASTOR® Amendment No. 2, March 22, 2010, NRC Docket No. 72-1031, TAC No. L24432
3. NRC Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors," June 1974
4. Maine Yankee Atomic Power Company letters to the NRC dated October 30, 2001, November 29, 2001, and February 7, 2002

5. NRC letter to Maine Yankee Atomic Power Company dated July 5, 2002, "Exemption from 10 CFR 72.212 and 72.214 for Dry Spent Fuel Storage Activities"

6. MAGNASTOR® Final Safety Analysis Report, Revision 0

7. NRC Certificate of Compliance for Spent Fuel Storage Casks Issued to NAC International Inc. (NAC), Certificate No. 1015, UMS® Universal Storage System, Amendment No. 4, Effective Date November 20, 2000

Pending Changes to MAGNASTOR® Certificate of Compliance

Appendix A

Technical Specifications

3.3 MAGNASTOR SYSTEM Radiation Protection

3.3.2 TSC Surface Contamination

LCO 3.3.2 Removable contamination on the exterior surfaces of the TSC shall not exceed:

a. 10,000 dpm/100 cm^2 from beta and gamma sources; and

b. 100 dpm/100 cm^2 from alpha sources.

APPLICABILITY: During LOADING OPERATIONS

ACTIONS

NOTE

Separate Condition entry is allowed for each MAGNASTOR SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. TSC removable surface contamination limits not met	A.1 Restore TSC removable surface contamination to within limits	Prior to TRANSPORT OPERATIONS

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.2	Verify by either direct or indirect methods that the removable contamination on the exterior surfaces of the TSC is within limits	Once, prior to TRANSPORT OPERATIONS

5.0 ADMINISTRATIVE CONTROLS AND PROGRAMS

The following programs shall be established, implemented and maintained.

5.1 Radioactive Effluent Control Program

5.1.1 A program shall be established and maintained to implement the requirements of 10 CFR 72.44 (d) or 10 CFR 72.126, as appropriate.

5.1.2 The MAGNASTOR SYSTEM does not create any radioactive materials or have any radioactive waste treatment systems. Therefore, specific operating procedures for the control of radioactive effluents are not required. LCO 3.3.2, TSC Surface Contamination, provides assurance that excessive surface contamination is not available for release as a radioactive effluent.

5.1.3 This program includes an environmental monitoring program. Each general license user may incorporate MAGNASTOR SYSTEM operations into their environmental monitoring program for 10 CFR Part 50 operations.

5.2 TSC Loading, Unloading, and Preparation Program

A program shall be established and maintained to implement the FSAR, Chapter 9 requirements for loading fuel and components into the TSC, unloading fuel and components from the TSC, and preparing the TSC and CONCRETE CASK for storage. The requirements of the program for loading and preparing the TSC shall be completed prior to removing the TSC from the 10 CFR 50 structure. The program shall provide for evaluation and control of the following FSAR requirements during the applicable operation:

a. Verify that no TRANSFER CASK handling or CONCRETE CASK handling using the lifting lugs occurs when the ambient temperature is < 0°F.

b. The water temperature of a water-filled, or partially filled, loaded TSC shall be shown by analysis and/or measurement to be less than boiling at all times.

c. Verify that the drying time, cavity vacuum pressure, and component and gas temperatures ensure that the fuel cladding temperature limit of 400°C is not exceeded during TSC preparation activities, and that the TSC is adequately dry. For fuel with burnup > 45 GWd/MTU, limit cooling cycles to ≤ 10 for temperature changes greater than 65°C.

d. Verify that the helium backfill purity and mass assure adequate heat transfer and preclude fuel cladding corrosion.

e. The integrity of the inner port cover welds to the closure lid at the vent port and at the drain port shall be verified in accordance with the procedures in Section 9.1.1.

(continued)