

June 5, 2014

U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Attn: Document Control Desk

Subject: U.S. Nuclear Regulatory Commission Certificate of Compliance No. 1031 for the NAC International MAGNASTOR® Cask System Technical Specification Deficiency

Docket No. 72-1031

References: 1. U.S. Nuclear Regulatory Commission (NRC) Certificate of Compliance (CoC) No. 1031 for the NAC International MAGNASTOR Cask System, Amendment 2, January 30, 2012, and Amendment 3, July 25, 2013
2. MAGNASTOR Cask System Final Safety Analysis Report (FSAR), Revision 5, NAC International, August 2013

NAC International (NAC) hereby provides information relative to a deficiency discovered in Appendix B of Reference 1, actions taken to date and planned actions to correct the deficiency.

Background:

During the week of May 25, 2014, NAC discovered the following discrepancies in Appendix B of Reference 1:

- Table B2-5, "Additional SNF Assembly Cool Time Required to Load NONFUEL HARDWARE" contains non-conservative additional cooling times for fuel assemblies loaded with an RCCA
- Table B2-5 needs to be expanded to cover the use of the three-zone and four-zone preferential loading patterns with NONFUEL HARDWARE

Immediate Actions Taken:

After identifying the calculation error used to determine the additional fuel assembly cool time when loaded with an RCCA and correcting it, NAC re-performed the analyses and determined the correct additional cool times for assemblies containing RCCAs. Subsequently, NAC contacted Duke Energy (Duke) and ZionSolutions (Zion), the two licensees loading MAGNASTOR systems, to notify them of the condition and to assess if any loaded or planned to be loaded systems did not meet the correct additional cool times. NAC verbally notified the NRC of the condition and requested a conference call to formally present the subject and to allow affected licensees to participate.

NAC has developed a Self-Identification Report (SIR) and a Finding Report (FR) to enter the condition into its corrective action program. A preliminary extent of condition review was performed, which will be finalized and formally documented as part of the close out of the issue.

A conference call with participation from NRC SFST, NRC Region III, NAC, Duke and Zion took place Monday, June 2, 2014. For a complete list of participants and topics discussed (see Attachment 1).

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Impact of Deficiency:

As reported during the June 2, 2014 conference call, Duke is loading under Amendment 2 and Zion is loading under Amendment 3 of Reference 1. NAC has determined that the condition has no safety impact on any MAGNASTOR systems already loaded by Duke or Zion, nor has any safety impact been identified on upcoming loading campaigns because these systems are bounded by the safety limits presented in the FSAR, which will be described in Proposed Action No. 1 shown below. Both Licensees plan to continue loading systems while correction of the TS is being performed (see Attachment 1). Each site will have administrative controls in place to ensure loaded systems meet the correct cool time values. The method of correcting the Amendment 2 and Amendment 3 TS remains to be determined.

MAGNASTOR Amendment 4 (in Rulemaking) and Amendment 5 (in the final phase of technical review) are also affected. Supplements are being prepared by NAC to make the necessary corrections to the proposed TS of these two amendments.

Proposed Actions:

1. NAC to supplement the Amendment 4 and Amendment 5 applications (estimated submission date by June 13, 2014)
2. NAC to perform required actions in response to the SIR/FR, including formal documentation of the extent of condition investigation (estimated closeout of SIR/FR by June 30, 2014)
3. NAC to engage the NRC in developing and executing a plan for correction of the Amendment 2 and Amendment 3 TS (estimated completion date by August 29, 2014)
4. NAC to coordinate with Duke and Zion to ensure continued loading of systems (ongoing activity)

The above proposed actions will be performed as noted. Completion dates may be modified based on further input from the NRC, NAC, Duke and Zion.

Should there be any questions regarding the above, NAC personnel are available to support future conference calls at NRC's request. For additional information, please contact me at 678-328-1274.

Sincerely,



Anthony L. Patko
Director, Licensing
Engineering

Attachment 1 – Record of June 2, 2014 Conference Call

Date: June 2, 2014

Topic: MAGNASTOR RCCA Cooling Times, TS Table B2-5

<u>Attendee Name</u>	<u>Organization</u>	<u>Attendee Name</u>	<u>Organization</u>
Wren Fowler	NAC	George Carver	NAC
Holger Pfeifer	NAC	Tony Patko	NAC
Steve Buckner	NAC	Jeff Dargis	NAC
Gerard van Noordennen	Zion	Craig Seaman	NAC
Rick Williams	Zion	Scott Woodbury	Duke
Ryan Davis	Duke	Jenn Saucier	Duke
Steven Edwards	Duke	Lee Hentz	Duke
Matt Keene	Duke	Craig Bigham	Duke
Bernard White	NRC SFST	John Nguyen	NRC SFST
Tony Hsia	NRC SFST	Rhex Edwards	NRC Region 3
Pamela Longmire	NRC SFST	Matt Learn	NRC Region 3

Meeting Summary

NAC informed the NRC of two MAGNASTOR TS issues, which had been discovered during the week of May 23, 2014. It was reported that MAGNASTOR Appendix B, Table B2-5, “Additional SNF Assembly Cool Time Required to Load NONFUEL HARDWARE” contains non-conservative RCCA additional cooling times due to the added heat loads of nine RCCAs being distributed across the entire basket instead of applying the added heat load only to the nine fuel bundles in which the RCCAs were to be placed. NAC also informed the NRC that while performing an extent of condition type review, NAC discovered that Table B2-5 needed to be expanded to accommodate three-zone and four-zone preferential loading patterns.

It was communicated that since the discovery of the issues, NAC has re-performed the analysis to determine the appropriate cooling times for the uniform and three-zone loading patterns and had contacted Duke and Zion to verify no canisters had been loaded with RCCAs which did not meet the newly determined cooling times. It was reported that Duke and Zion had not loaded RCCAs which were not in compliance with the newly determined cooling times.

NAC informed the NRC that submittal packages to supplement Amendment 4 and Amendment 5 were being prepared to adjust the values currently reported in Table B2-5 and that the packages would be submitted as soon as possible.

NAC stated Duke was currently loading under Amendment 2 and Zion was loading under Amendment 3. It was stated both amendments were affected by the incorrect information presented in Table B2-5. It was pointed out that only Duke had been using the three zone preferential loading pattern.

NAC requested that Zion and Duke state their current operational statuses, with regard to TSC loadings, and intended path forward so that the NRC could be aware of actions being taken by the licensees.

Gerry van Nordennen from Zion informed the NRC that decommissioning activities were currently underway and that 21 of 61 TSCs have been loaded to date. It was expressed that since being informed of the issue, Zion has captured the issue in their corrective action program (CAP) and are aware of NAC’s planned actions. Zion stated the 21 TSCs loaded to date comply with the correct additional fuel assembly cool times and that all TSCs complied with the TS dose limits. It was expressed that Zion intended to continue with loading TSCs under the current CoC and the revised cooling times provided by NAC. It was stated by Zion that one TSC is to be loaded the week of June 1, 2014, which contains no RCCAs and

another TSC containing RCCAs, which comply with the revised cooling times, is to be loaded the following week (week of June 8, 2014). Once in effect, Zion intends to adopt the new amendment via 10 CFR 72.212. The NRC provided no comments in response to the statements made by Zion.

Steven Edwards from Duke stated that McGuire would be loading 2 TSCs starting June 8, 2014 in preparation for a fall outage, under CoC Amendment 2, and that BPRAs were to be loaded in compliance with the new cooling times provided by NAC for the three-zone preferential loading pattern. It was explained that the two TSCs to be loaded were required to maintain full core off-load reserve for McGuire. Likewise, Duke stated that 5 TSCs would be loaded following the same approach at Catawaba. Lee Hentz from Duke McGuire suggested these actions were aligned with NRC Administrative Letter 98-10. Specifically, the use of administrative controls in response to an improper or inadequate TS is considered to be an acceptable short-term corrective action but also recognized the letter is not directly applicable to 10 CFR 72.

Duke provided further logic on how they intend to proceed with loading MAGNASTOR systems with the TS error. As a Part 72 General Licensee, Duke takes credit for various areas of their Part 50 license. That includes credit for Part 50, Appendix B Criteria V (Procedures) and Criteria XVI (Corrective Action Program). This provides a direct tie between Part 50 and the implementation of the Part 72 General License. That includes the MAGNASTOR CoC and TS. Duke noted that operating reactors handle identified non-conservative TS errors via guidance provided in NRC Administrative Letter 98-10. This administrative letter describes the procedural controls when a non-conservative TS is identified. As a Part 72 General Licensee, Duke intends on implementing this Part 50 guidance while the TS error is corrected in order to continue loading MAGNASTOR systems.

The NRC caucused, and returned to the call to state no determination as to the applicability of NRC Administrative Letter 98-10 could be made during the call but the possibility would be looked into. It was stated the NRC needed to determine the appropriate course of action before responding.

The NRC proceeded to ask questions regarding the extent of condition. The NRC asked if only RCCAs cooling times were affected by the error. NAC responded that BPRAs were minimally affected for preferential loading patterns, which impacts Duke. It was asked when the full extent of condition would be completed. NAC responded that an initial extent of condition type review has been completed and a Self-Identification Report (SIR) has been issued to document the condition. The NRC asked if the scope and breadth of the condition have been fully covered, to which NAC stated it had been. It was asked by the NRC if the BPRAs cooling times had been extended. NAC responded that for high heat loads the cooling time had increased slightly and for low heat loads the time had actually decreased slightly.

The NRC asked for clarification if this was a shielding (i.e. radiation protection) or thermal error. NAC clarified that the error occurred in the shielding calculation, which had a thermal error in the heat load/cool time for NONFUEL HARDWARE. To determine heat loads, decay scheme (e.g. isotopic composition) codes are used. For NAC, the results are documented in the shielding calculations. This error has no effect on the shielding/radiation protection calculations as they are conservatively performed with no “cool time adder” when adding the NONFUEL HARDWARE source terms.

Tony Hsia summarized the NRC’s understanding of the Licensee’s actions; (1) Duke McGuire is to load on Sunday (June 8, 2014) and (2) Zion was to load canisters without RCCAs on June 3, 2014, but would be loading RCCAs in canisters on June 7, 2014.

Representatives from NRC Region III had no input to provide to NAC or the Licensees but were to call headquarters after the conference call to discuss the situation and path forward.

The NRC stated there were no further questions, and the call was concluded.