

August 4, 2022

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

Attn: Document Control Desk

Subject: MAGNASTOR Cask System Users CoC Amendments 0 thru 9 Intent to Adopt Letters

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 No. 9, December 7, 2020
 2. MAGNASTOR Cask System Final Safety Analysis Report (FSAR), Revision 12, NAC International, September 2021
 3. ED20220004, Submission of an Amendment Request for the NAC International MAGNASTOR Cask System Amendment No. 12, January 24, 2022
 4. ML22041A550, Teleconference for the Discussion of Amd. No. 12 and Potential Revision to Certificate of Compliance No. 1031 for the MAGNASTOR Storage System, February 24, 2022
 5. ED20220032, Supplement to NAC's Amendment Request for the NAC International MAGNASTOR® Cask System Amendment No. 12, March 18, 2022
 6. NRC Letter, Application for Amendment No. 12 to the Model No. MAGNASTOR Storage Cask – Request for Additional Information, April 12, 2022
 7. ED20220060, RAI Response to NAC's Amendment Request for the NAC International MAGANSTOR Cask System Amendment No. 12, April 18, 2022

Via Reference 7, NAC International (NAC) requested the changes being proposed to the Technical Specifications (TS) in Amendment 12 be included in Amendments 0 thru 9 via the issuance of a Certificate of Compliance (CoC) revision. In an effort to avoid a 10 CFR Part 72 backfit review, NAC is providing via Enclosure 1, herein, formal letters from all our current MAGNASTOR users which documents their intent to adopt the revised CoCs shortly after they become effective in 10 CFR Part 72. The letters cover the following ISFSIs: Palo Verde, Duke-McGuire, Duke-Catawba, Kewaunee, TMI-1, and Zion. If you have any comments or questions, please contact me on my direct line at 678-328-1236.

Sincerely,

Wren Fowler  Digitally signed by Wren Fowler
Date: 2022.08.04 09:19:21
-04'00'

Wren Fowler
Director, Licensing
Engineering

Enclosure:
Enclosure 1 – MAGNASTOR Cask System Users CoC Amendments 0 thru 9 Revisions Intent to Adopt Letters

ED20220123

Enclosure 1

MAGNASTOR Cask System Users

CoC Amendments 0 thru 9 Revisions

Intent to Adopt Letters

(Docket No 72-1031)

NAC International

August 2022



102-08436-CDH/KJG
April 28, 2022

Cary D. Harbor
Vice President
Regulatory & Oversight

**Palo Verde
Nuclear Generating Station**
P.O. Box 52034
Phoenix, AZ 85072
Mail Station 7602
Tel: 623.393.7953

ATTN: Document Control Desk
Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: **Palo Verde Nuclear Generating Station
Units 1, 2, and 3 and Independent Spent Fuel Storage Installation
Docket Nos. STN 50-528/529/530 and 72-44
Renewed Operating License Nos. NPF-41, NPF-51, NPF-74
Request for Exemption from NAC-MAGNASTOR Certificate of Compliance
72-1031 - Cask Lid Design Requirements - Supplement**

In accordance with the provisions of 10 CFR 72.7, *Specific Exemptions*, Arizona Public Service Company (APS) requested an exemption from the provisions of 10 CFR 72.212(a)(2), 72.212(b)(3), 72.212(b)(5)(i), 72.212(b)(11), and 10 CFR 72.214 for the Palo Verde Nuclear Generating Station (PVNGS) Independent Spent Fuel Storage Installation by letter number 102-08416, dated March 31, 2022 [Agencywide Documents Access and Management System (ADAMS) Accession Number ML22090A098]. Specifically, an exemption was requested for the cask lid concrete design requirements in the NAC-MAGNASTOR Certificate of Compliance (CoC).

The requested exemption would apply to NAC-MAGNASTOR dry casks, described in the exemption request Enclosure of letter number 102-08416, that are or will be used by APS at PVNGS under CoC Amendment 7 listed in 10 CFR 72.214 (72-1031). By letter dated April 18, 2022, NAC International, Inc., the certificate holder for the NAC-MAGNASTOR system, responded to an NRC staff request for additional information (RAI) regarding the proposed revisions to the various amendments to the CoC (ADAMS Accession Number ML22108A197).

The NAC RAI response included proposed changes to the Technical Specifications (TS) and forms the regulatory and technical basis for the exemption request in letter number 102-08416. The proposed TS changes listed in Enclosure 1 to the NAC RAI response are met by APS, based upon NAC letter dated April 25, 2022 (Letter number ED20220065). APS intends to implement Revision 1 to Amendment 7 of the CoC, when final rulemaking is completed.

102-08436-CDH/KJG

ATTN: Document Control Desk

U. S. Nuclear Regulatory Commission

Request for Exemption from NAC-MAGNASTOR CoC 72-1031 - Cask Lid Design Requirements
- Supplement

Page 2

No new commitments are being made in this submittal. If you have any questions about this request, please contact Matthew S. Cox, Licensing Section Leader, at (623) 393-5753.

Sincerely,

Harbor, Cary
(Z16762)

Digitally signed by Harbor,
Cary (Z16762)
Date: 2022.04.28 16:14:19
-07'00'

CDH/KJG/mg

cc: S. A. Morris NRC Region IV Regional Administrator
S. P. Lingam NRC NRR Project Manager for PVNGS
B. H. White NRC NMSS Project Manager
L. N. Merker NRC Senior Resident Inspector for PVNGS
B. D. Goretzki Arizona Department of Health Services – Bureau of Radiation
Control

Apr. 12, 2022

Eric Shewbridge
NAC International
3930 East Jones Bridge Road, Suite 200
Norcross, GA 30092

Subject: Duke Energy Compliance with NAC MAGNASTOR VCC Lid ACI Compliance Issue

Dear Mr. Shewbridge:

On February 1, 2022, NAC notified Duke Energy about an issue identified during an NRC inspection of NAC component fabrication activities conducted at Petersen, Inc. in December 2021. The NRC identified a Non-Cited Violation (NCV), Severity Level IV, regarding NAC's vendor nonconformance report (VNCR) and 72.48 process. Specifically, Design Change Request (DCR(L)) 71160-FSAR-0Q and its associated 10 CFR 72.48 screening No. NAC-09-MAG-052 removed explicit mention of the American Concrete Institute (ACI) ACI-318 requirements for slump, air entrainment, temperature, and compressive strength from FSAR Revision 0, Table 1.3-4 for the Concrete Cask lid by creating a new table specific to the Concrete Cask lid. The Concrete Cask body requirements remained unchanged. The specific violation was that NAC failed to file a Certificate of Compliance (CoC) amendment with the NRC fully describing the changes being made prior to implementing them via DCR(L) 71160-FSAR-0Q. The NRC CoC, Docket 72-1031, Appendix A, "Technical Specifications and Design Features for the MAGNASTOR System," Section 4.2, "Codes and Standards," commits to "The American Concrete Institute Specifications ACI-349 and ACI-318 govern the CONCRETE CASK design and construction, respectively." This letter is being written to document the current Duke Energy position with respect to the identified condition.

Duke Energy with the support of NAC immediately performed an investigation of the previously fabricated systems on site for compliance with the ACI requirements as stated in Table 1.3-4 in Amendment 0 of the MAGNASTOR FSAR prior to the changes implemented via DCR(L) 71160-FSAR-0Q. These investigations are documented within the Duke Energy corrective action program as NCRs 02415332 and 02415334 for Catawba and McGuire respectively. The investigation concluded the Concrete Cask lid continues to perform its licensed safety function. The concrete in the Concrete Cask lid has only been evaluated for a radiation shielding function and that is verified through concrete density checks during fabrication. In addition, the Technical Specifications require that dose measurements are always taken prior to moving a loaded cask to the storage pad to ensure the Concrete Cask lid performs adequately with respect to its licensing basis radiation shielding function. There have been no nonconformances for insufficient shielding in any of the MAGNASTOR storage cask systems. Therefore, the issued NCV does not affect the ability of the systems to perform their intended safety functions and does not create a substantial safety hazard.

NAC's approach for all licensees with in-process and near-term loading operations was to determine if the concrete cask lids provided comply, in essence, with the requirements of Table 1.3-4 in FSAR Revision 0. This requires that manufacturing evidence of the concrete ready-mix design and batch sheets from delivery. NAC and Duke Energy were not able to find

supporting information for the previously fabricated systems based on documentation package reviews and other quality records. This lack of fabrication information does not allow NAC to determine compliance, in essence, with the requirements of Table 1.3-4 and is not supportive of the cask lid concrete requirements for the systems proposed to be loaded in Summer 2022. As a result of the inability to provide adequate documentation, Duke Energy was required to submit an exemption request to continue with planned loading campaigns. That request was submitted to the NRC on April 7, 2022 (Duke Energy letter number RA-22-0080). The Vertical Concrete Casks (VCCs) listed in Enclosure 1 do not fully conform to the ACI requirements.

All systems are currently certified to Amendment 7 of the NAC MAGNASTOR CoC, Number 1031.

NAC submitted Amendment 12 on January 24, 2022 and provided a supplement, which included necessary Technical Specification changes that avoided an update directly to the FSAR, on March 18, 2022. In addition, it is expected that a revision will be issued to each applicable CoC amendment utilizing the technical basis from the Amendment 12 submittal and supplement. Both Catawba and McGuire plan to adopt this MAGNASTOR CoC, Number 1031, Amendment 7 revision as soon as practical after it is issued. All previously fabricated systems on site will be recertified to the adopted amendment revision.

Until MAGNASTOR CoC revisions are issued and adopted by Catawba and McGuire, each station will continue its current loading schedule utilizing the exemption request once approved.

Sincerely,

A handwritten signature in black ink that reads "Kevin Houston". The signature is written in a cursive, slightly slanted style.

Kevin Houston
Director, Fuel Management and Design, Nuclear Fuels Engineering

cc: R.S. Edwards (Duke Energy)
P. Washington (Duke Energy)
C.G. Long (Duke Energy)
W. Fowler (NAC)

Enclosure 1

List of Affected Vertical Concrete Casks (VCCs)

Duke Energy			
Site	Serial Number	Model	Loading Status
CNS	CN-VCC-073	MAGNASTOR	Loaded
CNS	CN-VCC-074	MAGNASTOR	Loaded
CNS	CN-VCC-075	MAGNASTOR	Loaded
CNS	CN-VCC-076	MAGNASTOR	Loaded
CNS	CN-VCC-077	MAGNASTOR	Loaded
CNS	CN-VCC-078	MAGNASTOR	Loaded
CNS	CN-VCC-079	MAGNASTOR	Loaded
CNS	CN-VCC-080	MAGNASTOR	Loaded
CNS	CN-VCC-081	MAGNASTOR	Loaded
CNS	CN-VCC-082	MAGNASTOR	Loaded
CNS	CN-VCC-083	MAGNASTOR	Loaded
CNS	CN-VCC-084	MAGNASTOR	Loaded
CNS	CN-VCC-085	MAGNASTOR	Loaded
CNS	CN-VCC-086	MAGNASTOR	Loaded
CNS	CN-VCC-087	MAGNASTOR	Loaded
CNS	CN-VCC-088	MAGNASTOR	Loaded
CNS	CN-VCC-089	MAGNASTOR	Loaded
CNS	CN-VCC-090	MAGNASTOR	Loaded
CNS	CN-VCC-091	MAGNASTOR	Loaded
CNS	CN-VCC-092	MAGNASTOR	Loaded
CNS	CN-VCC-093	MAGNASTOR	Loaded
CNS	CN-VCC-094	MAGNASTOR	Loaded
CNS	CN-VCC-095	MAGNASTOR	Loaded
CNS	CN-VCC-096	MAGNASTOR	Loaded
CNS	CN-VCC-118	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-119	MAGNASTOR	Loaded
CNS	CN-VCC-120	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-121	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-122	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-123	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-124	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-125	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-126	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-127	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-128	MAGNASTOR	Not Yet Loaded
CNS	CN-VCC-129	MAGNASTOR	Not Yet Loaded

Duke Energy			
Site	Serial Number	Model	Loading Status
MNS	MN-VCC-053	MAGNASTOR	Loaded
MNS	MN-VCC-054	MAGNASTOR	Loaded
MNS	MN-VCC-055	MAGNASTOR	Loaded
MNS	MN-VCC-056	MAGNASTOR	Loaded
MNS	MN-VCC-057	MAGNASTOR	Loaded
MNS	MN-VCC-058	MAGNASTOR	Loaded
MNS	MN-VCC-059	MAGNASTOR	Loaded
MNS	MN-VCC-060	MAGNASTOR	Loaded
MNS	MN-VCC-061	MAGNASTOR	Loaded
MNS	MN-VCC-062	MAGNASTOR	Loaded
MNS	MN-VCC-063	MAGNASTOR	Loaded
MNS	MN-VCC-064	MAGNASTOR	Loaded
MNS	MN-VCC-065	MAGNASTOR	Loaded
MNS	MN-VCC-066	MAGNASTOR	Loaded
MNS	MN-VCC-067	MAGNASTOR	Loaded
MNS	MN-VCC-068	MAGNASTOR	Loaded
MNS	MN-VCC-069	MAGNASTOR	Loaded
MNS	MN-VCC-070	MAGNASTOR	Loaded
MNS	MN-DF VCC-071	MAGNASTOR DF	Loaded
MNS	MN-DF VCC-072	MAGNASTOR DF	Loaded
MNS	MN-VCC-100	MAGNASTOR	Not Yet Loaded
MNS	MN-VCC-101	MAGNASTOR	Loaded
MNS	MN-VCC-102	MAGNASTOR	Not Yet Loaded
MNS	MN-VCC-103	MAGNASTOR	Loaded
MNS	MN-VCC-104	MAGNASTOR	Loaded
MNS	MN-VCC-105	MAGNASTOR	Loaded
MNS	MN-VCC-106	MAGNASTOR	Loaded
MNS	MN-VCC-107	MAGNASTOR	Loaded
MNS	MN-VCC-108	MAGNASTOR	Loaded
MNS	MN-VCC-109	MAGNASTOR	Loaded
MNS	MN-VCC-110	MAGNASTOR	Loaded
MNS	MN-VCC-111	MAGNASTOR	Loaded
MNS	MN-VCC-112	MAGNASTOR	Not Yet Loaded
MNS	MN-VCC-113	MAGNASTOR	Not Yet Loaded
MNS	MN-VCC-114	MAGNASTOR	Not Yet Loaded
MNS	MN-VCC-115	MAGNASTOR	Not Yet Loaded
MNS	MN-VCC-116	MAGNASTOR	Not Yet Loaded
MNS	MN-VCC-117	MAGNASTOR	Not Yet Loaded

Dominion Energy Kewaunee, Inc.
N490 Hwy 42, Kewaunee, WI 54216
Web Address: www.dominionenergy.com



LIC-2022-002

June 14, 2022

NAC International
Wren Fowler
3930 East Jones Bridge Road, Suite 200
Peachtree Corners, GA 30092

Subject: Dominion Energy Kewaunee Voluntary Agreement to Implement CoC 1031
Amendment Revision To Resolve MAGNASTOR Concrete Lid Noncompliance Issue

Ref: Kewaunee CR 2266

Dear Mr. Fowler,

In February, 2022, NAC notified Dominion Energy Kewaunee (DEK) about an NRC issued violation concerning NAC's VNCR and 72.48 process, specifically DCR(L) 71160-FSAR-0Q (NAC-09-MAG-052) that was processed in 2009 to remove explicit mention of the ACI 318 requirements for slump, air entrainment, temperature, and compressive strength from FSAR Revision 0 for the Concrete Cask Lid. NRC position is that this change should have been submitted for prior NRC approval. It was not. Prior to the change at issue, MAGNASTOR Technical Specifications and FSAR did not explicitly delineate between the concrete in the cask body and the concrete in the cask lid. Therefore, the changes made to remove code requirements for the concrete lid were viewed by NRC as changes the licensee (NAC) was not authorized to make under the 10 CFR 72.48 process.

DEK presently has MAGNASTOR casks in storage at Kewaunee under CoC 1031 Amendment 6. It is our understanding that NAC intends to request from NAC issuance of Revision 1 to Amendment 6 to resolve the issue.

DEK agrees to voluntarily implement this CoC 1031 MAGNASTOR Amendment Revision for our general licensee independent spent fuel storage installation at the Kewaunee Power Station.

In order to allow sufficient time to incorporate these changes in a quality manner, we request that NAC work with NRC to provide its general licensees a maximum 180-day period after the effective date of the revised amendment during which we can complete incorporation of the revised amendment.

Dominion Energy Kewaunee, Inc.
N490 Hwy 42, Kewaunee, WI 54216

Web Address: www.dominionenergy.com



If you have any questions, please contact Mr. William Zipp at (920) 304-9729.

Sincerely,

A handwritten signature in black ink that reads "Brady J. McMahon".

Brady J. McMahon
ISFSI Site Director, Kewaunee Power Station

06-14-22

Date

Enclosure

RS-22-100
July 28, 2022

ATTN: James J. Puzan
NAC International Inc
Atlanta Corporate Headquarters
3930 East Jones Bridge Road, Suite 200
Norcross, GA 30092

Subject: Notification of Intent to Implement Revised CoC

The purpose of this letter is to notify NAC International (NAC), that Constellation Energy Generation (CEG) intends to implement the revised certificate of compliance (CoC) for the MAGNASTOR® system, CoC No. 1031 Amendment 9 Revision 1 at the Three Mile Island Nuclear Station, Unit 1, (TMI-1), after approval from the NRC has been received. Implementation will be completed in a timely fashion after approval.

If you have any questions concerning this letter, please contact me at (630) 657-2823.

Respectfully,



Patrick R. Simpson
Sr. Manager Licensing
Constellation Energy Generation, LLC

cc: James J. Puzan – NAC International, jpuzan@nacintl.com
George Carver – NAC International, gcarver@nacintl.com
Wren Fowler – NAC International, wfowler@nacintl.com

April 12, 2022

ZS-2022-0015

James J. Puzan
Director of Projects
NAC International Inc.
3930 East Jones Bridge Road, Suite 200
Peachtree Corners, GA 30092

Subject: ZionSolutions Response to NAC Finding Report (FR No 22-001)
MAGNASTOR VCC Closure Lid Concrete Requirements Issue

References:

1. Letter, George C Carver (NAC) to Gerry Van Noordennen (ZionSolutions), dated March 1, 2022, NAC file no. ED20220030, "NAC Finding Report (FR No. 2022-001) Impact to Safety"
2. NAC International Finding Report (FR No. 22-002) and Response –Report
3. US NRC Inspection Report No. 72-1015/2021-201, January 21, 2022
4. ED20220004, Submission of an Amendment Request for the NAC International MAGNASTOR Cask System Amendment No. 12, ADAMS No. ML22024A374, January 24, 2022

Dear Mr. Puzan:

By way of Reference 1, NAC informed ZionSolutions of the licensing issues related to MAGNASTOR VCC Closure Lid concrete design requirements as documented in Reference 2 and raised by the NRC as a result of an audit of NAC component fabrication activities conducted at Petersen, Inc. (Reference 3).

At issue are the design requirements applicable to VCC closure lids. NAC DCR(L) 71160-FSAR-0Q was issued (in 2009) to clarify requirements for the concrete cask body and the concrete cask lid. The requirements for the concrete cask lid were reduced to meeting a minimum concrete density of 140 pounds/cubic foot (minimum) with no concrete strength requirements other than that strength which results from use of commercial grade concrete fill. As described in References 1 and 2, this DCR(L) was not properly processed as it should have been submitted to the NRC as a change to the Certificate of Compliance (versus being processed as a 10 CFR 72.48 review). Thus, the requirements of MAGNASTOR FSAR Revision 0 for VCC concrete remained applicable; hence, in addition to the minimum concrete density requirement, there was a minimum concrete strength requirement (i.e., 4000 psi). This strength requirement should only have been applicable to the VCC concrete body. In order to reconcile the attendant licensing deficiency, NAC has taken licensing action in submitting an

amendment request to the NRC for approval (Reference 4). This amendment will permit proper alignment of VCC body and lid concrete design requirements.

NAC's conclusion in Reference 1 that the as-fabricated MAGNASTOR VCC closure lids that are in-service are performing their intended safety function (i.e., as radiation shielding). Furthermore, a review of fabrication data for the VCC closure lids supplied to Zion demonstrates that all Zion VCC closure lids have concrete densities that exceed the minimum requirement of 140 pounds/cubic foot.

As recommended in Reference 1, ZionSolutions has entered the non-compliance in the site's corrective action program (ZS CR 2022-0015) and has performed an operability determination demonstrating that the Zion VCC closure lids are fulfilling their intended safety function.

Finally, ZionSolutions also intends to rely on NRC's approval of NAC's Amendment 12 and issuance of a revised Certificate of Compliance (CoC) that reconciles the licensing issue associated with MAGNASTOR VCC closure lid concrete requirements and permits closure of ZS CR 2022-0015.

Respectfully,

Gerard van Noordennen
Senior Vice President Regulatory Affairs

cc: W. Fowler (NAC)
E. Shewbridge (NAC)
A. Orawiec (ZS/Constellation Nuclear)
W. Szymczak (ZS)
K. Van Hoogen (ZS)